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Worldwide Report

NUCLEAR DEVELOPMENT AND PROLIFERATION

No. 93



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BRIEFS

EGYPT SEEKS NUCLEAR COOPERATION--Cairo, March 19: Egypt hopes India will participate in its expanded nuclear power programme, according to the minister for electricity, Mr. Maher Abaza. Mr. Abaza, who returned from India two months ago after bilateral discussions aimed at boosting energy co-operation, said in an interview yesterday that Egypt's hopes were centred on tapping nuclear power for electricity production. Research had shown that the cost of nuclear power per kilowatt hour would be half that of thermal power. Discussions were going on with the British, American and French governments for providing eight nuclear power plants by the end of the century. Such discussions did not rule out participation by other countries, Mr. Abaza said. India, for example, was already involved in Egypt's thermal power generation plans. Mr. Abaza said he had met Dr. Homi Sethna, chairman of the Atomic Energy Commission, during his last visit. "We have invited him to come here and see what we are doing in the nuclear field." He added: "India could play a role in the training institute for nuclear engineers that we are planning to set up." Such an institute would be open for training to nuclear power engineers from all friendly countries. [By Shyam Bhatia] [Text] [Bombay THE TIMES OF INDIA in English 20 Mar 81 p 17]

CSO: 5100

KOONGARRA URANIUM MINING STARTUP PROJECTED FOR THIS YEAR

Perth THE WEST AUSTRALIAN in English 20 Mar 81 p 39

[Text] Development work on the Koongarra uranium deposit in the Northern Territory could start at the end of this year, according to Denison Australia Ltd.

The early start could be achieved despite the fact that two important hurdles were still to be overcome, said Denison's managing director, Mr Kevin Torpey.

These were the completion of negotiations with the Northern Land Council and approval from the Foreign Investment Review Board.

Denison, wholly owned by Denison Mines Ltd of Canada, brought the deposit last year from another Canadian-owned mining company, Noranda Australia Ltd.

The Federal Government approved the purchase in October, but development cannot proceed until 75 per cent Australian ownership of the project is achieved.

Mr Torpey said that Denison was working on a proposition to naturalise the project.

He declined to say what the proposition was, but said the possibilities included a public float, the sale of equity to other mining companies or institutions or a combination of both.

Several Australian companies had been in touch with Denison about Koongarra but no serious talks were taking place, he said.

The Koongarra deposit is in the environmentally sensitive Kakadu National Park in the Alligator River area of the NT and 20km south of the Ranger deposit.

With an estimated 13,000 tonnes of uranium oxide at an average grade of 0.3 per cent, Koongarra is considered a small but rich deposit.

CSO: 5100

LABOR PARTY VOWS TO QUASH URANIUM DEAL WITH FRANCE

Canberra THE AUSTRALIAN in English 11 Mar 81 p 2

[Article by Ross Peake]

[Text] A State Labor government would cancel all government arrangements with the French company Minetome, which plans to mine uranium at Ben Lomond, west of Townsville, the Queensland Parliament was told yesterday.

This was because of the company's support for the development of the neutron bomb, the Opposition Leader, Mr Casey, said.

He said a Labor government would not allow the mining, processing, export or use of uranium for any purpose until proper procedures were developed for the safe disposal of radioactive waste.

But the ALP would honor the commitment to continue mining at Mary Kathleen.

Mr Casey said: "Quite clearly, we will not support any future development of uranium mining and treatment in Queensland, and will repudiate any commitment made by a non-Labor government to the mining, processing or use of uranium from Queensland.

"The people of Queensland should know that this totally-owned French company, of which the French Government itself owns 20 per cent, is supporting through its owners the development of the neutron bomb.

"The first tests have been carried out by France on this bomb and it is understood that a decision on further production will be made during the 1982-83 year."

Mr Casey said the French Government already had a shocking record of testing its nuclear bombs in the Pacific, causing extremely high levels of radiation fall-out in milk and water in Queensland.

"The Australian Government took this matter to the International Court of Justice which found that France had contravened all principles of international justice in the way in which it had carried out its nuclear testing--France just can't be trusted," he said.

Mr Casey said it was the attitude of the French Government which had crushed Australia's primary industry exports to Europe.

"It is this further selfish attitude of France that is the driving force behind the Ben Lomond mining adventure," he said.

CSO: 5100

AUSTRALIA

UNIONS ACT ON BROAD FRONT TO HALT URANIUM INDUSTRY

Union Positions

Melbourne THE AGE in English 9 Mar 81 p 5

[Article by Michael Gordon]

[Text] Perth--A meeting of 27 unions here today will prepare a strategy, incorporating their experience in the Noonkanbah dispute, to stop the development of a uranium industry in Western Australia.

The Secretary of the WA Trades and Labor Council, Mr Peter Cook, said yesterday he was hopeful that the ACTU's policy against uranium could be enforced effectively in the State.

Mr Cook conceded that the union movement faced "a lot of obstacles" on the issue. The action of the WA government in transporting a drilling rig to Noonkanbah and operating it with staff labor had indicated how great the obstacles would be.

The meeting will involve all unions in the mining, milling, transport and export of uranium. Plans will be drafted to prevent work on Western Mining's project at Yeelirrie.

The talks precede a wider debate on uranium by the ACTU executive in Perth this week. The executive will review bans on the supply of equipment to mines in Queensland and the Northern Territory.

Mr Cook said the 27 unions would consider how problems with uranium banning in Queensland and the NT could be avoided.

The key mining union, the Australian Workers Union, has not yet indicated whether it will support action at Yeelirrie. Although the AWU has supported uranium at a federal level, its members at Kalgoorlie have expressed concern about health and safety standards.

Mr Cook said these workers had previously expressed support for action on the health and safety issue despite the policy of the AWU.

He believe the WA unions were better placed to take action because projects in Queensland and the NT were already in progress when the ACTU Congress took its last decision on uranium in 1979. [as published]

Mr Cook said no mining had taken place at Yeelirrie although a pilot treatment plant had been built at Kaloorlie, preliminary tests have begun and some overburden had been cleared at the site.

The ACTU Executive will discuss uranium during its four-day meeting in Perth which begins tomorrow. It is certain to support any action by the WA unions to stop Western Mining's project.

The Yeelirrie project got under way after Western Mining convinced the Federal Government to relax the previously announced policy on uranium development. The Government allowed less than 75 per cent of the project to be Australian owned and relaxed guidelines on the control of uranium once it was exported.

ACTU Expectations

Melbourne THE AGE in English 14 Mar 81 p 3

[Article by Michael Gordon]

[Excerpt] Perth--The president of the ACTU, Mr Dolan, yesterday predicted that unions would stop future uranium projects from going ahead. He said action to be taken by several unions would also lead to a scaling down of existing projects.

Speaking after a four-day meeting of the ACTU executive, Mr Dolan said he believed union policy against uranium could be implemented. Asked how long it would take, Mr Dolan said: "I'm not looking at the next three months or next six months. I'm not putting a time on it.

"I believe that over time we will at least scale down the industry and cause further developments, or proposed future developments, not to take place."

The executive discussed the ACTU's policy but took no decisions during the meeting.

A meeting of 27 West Australian unions, to be held within two weeks, will consider ways of stopping the development of the industry in the State. The unions will draw up a strategy aimed at stopping the Yeellirie development, north of Kalgoorlie.

At a meeting last Monday the unions decided to step up action against uranium, despite the opposition of the Australian Workers Union.

Mr Dolan said the executive had not yet had a report on the effectiveness of bans on the transport of uranium yellowcake by the Australian Railways Union. The bans were imposed on 1 March.

At a meeting of the executive late last year, Mr Dolan conceded that the union movement was about "two years too late" to stop uranium mining in Australia. Since then the ACTU has conducted an education campaign aimed at convincing workers of the dangers associated with the industry.

The ACTU policy of total opposition to the mining and export of uranium has proved ineffective since it was carried by the ACTU congress in 1979. The policy failed because several unions, including the AMU and the Miscellaneous Workers' Union, sought coverage of workers at mines in the Northern Territory and Queensland.

Union leaders believe that a main reason for this was that the projects were under way when the policy was carried. They believe that because the policy is now established they will have a better chance of stopping new developments.

Seamen's Ban

Melbourne THE AGE in English 17 Mar 81 p 4

[Text] Darwin.—Members of the Seamen's Union have voted to ban the export of yellowcake from the Northern Territory.

The first firms to be affected will be Queensland Mines Limited, which has already mined and milled the rich uranium deposit at Nabarlek, Arnhem Land, and V. B. Perkins and Co. Limited, the owners of the barges on which the ore is carried.

At least three shipments from Nabarlek have arrived in Singapore. They were flown from the uranium mine to Darwin after the Aborigines at Oenpelli threatened to sabotage the road on which they were being carried. The ban by seamen could now force the company to fly its yellow cake to Singapore.

Other mines will not yet be affected by the ban. Ranger, the giant uranium mine at the edge of Arnhem Land, will not be in production until after June. Other mines are still in the planning stage.

The Seamen's Union voted for the ban at a meeting in Darwin yesterday. It was attended by Mr P. J. Sweetensen, the union's assistant Federal secretary, and Mr J. Steele, secretary of the Queensland branch.

CSO: 5100

ANTHONY: GOVERNMENT WILLING TO SELL URANIUM TO EGYPT

Canberra THE WEEKEND AUSTRALIAN in English 21-22 Mar 81 p 1

[Article by Wlo Joustra]

[Text] Australia is willing to sell uranium to the strife-torn Middle East.

The disclosure, made at a press conference in Cairo by the Minister for Trade and Resources, Mr Anthony, caught Australian Government officials by surprise yesterday.

Mr Anthony said Australia was ready to sell Egypt uranium for nuclear power plants. He also said Australia might help Egypt prospect for uranium.

Egypt last month signed the Nuclear Non-Proliferation Treaty, which renounces the production of nuclear arms and provides for international inspection of the nuclear power industry.

Mr Anthony said he was convinced that Egypt would sign an agreement with the International Atomic Energy Agency, permitting an Egyptian nuclear power plant to be running by the end of this decade.

The Minister made his remarks after talks with Egyptian Government officials during his tour of the Middle East.

He said the supply of Australian yellow-cake to Egypt would be subject to the normal security procedures, including a nuclear safeguards agreement between the two countries.

Government officials in Canberra said yesterday they knew nothing about Egypt's desire to buy Australian uranium.

Mr Anthony apparently promised the Egyptian authorities he would urge Australian exploration companies to help Egypt in prospecting for uranium.

In the Middle East, relations between Egypt and more militant Arab nations, such as Iraq, Libya and Syria, have soured following the Camp David agreement between Egypt and Israel.

Sources in Canberra said yesterday Australia would make certain that its yellowcake would be used for peaceful purposes only.

But Egypt's desire to build up a nuclear power capacity would encourage Middle East countries antagonistic to President Sadat's policies to import yellow-cake.

This could lead to a potentially dangerous escalation in the supply of nuclear fuels to the Middle East.

CNO: 5100

OPPOSITION LEADER RAPS GOVERNMENT URANIUM POLICY

Canberra THE AUSTRALIAN in English 4 Mar 81 p 10

[Article by Wio Joustra]

[Excerpts] The presence of American bases qualified Australia as a high priority Soviet target in any nuclear exchange between the two superpowers, the Federal Opposition warned yesterday.

During the address-in-reply debate, Mr Bowen said all political leaders should have the courage publicly to recognise and question the fact that the existence of US bases created a potential risk.

In the areas of development aid and nuclear safeguards the Government's policy was in a state of scandal.

Mr Bowen referred in particular to the new US Navstar system, elements of which were reportedly to be sited 30 km from Adelaide.

"US experts have warned that the Soviet Union may well regard this system as facilitating an American preemptive attack," he said.

"The Australian people should be clearly informed of the general purpose and function of this system."

To hand control on the destination and use of uranium to the Department of Trade and Resources and the National Country Party, whose primary interest in yellowcake was selling it, was simply putting the poacher in charge of the pheasants.

"The safeguards policies have been bent and breached by proposals to sell uranium to South Korea and the Philippines--two governments whose standards and stability no one would want to be on--and to France which continues to despoil the Pacific with its nuclear tests and whose pipeline of uranium supply leads straight to nuclear weapons."

CSO: 5100

OPPOSITION ASSAILS FRENCH EFFORTS TO MINE URANIUM

Canberra THE AUSTRALIAN in English 6 Mar 81 p 17

[Article by Wio Joustra: "ALP Says Minatome 'Undesirable' Guest"]

[Text]

THE Federal Opposition yesterday warned that France could return Ben Lomond uranium to north Queensland within years in the form of radioactive fall-out from its nuclear tests in the Pacific.

The Opposition spokesman on the environment and conservation, Mr West, said in Canberra the Charters Towers Mining Wardens Court was expected this week to decide whether to approve plans by wholly-owned French company, Minatome, to mine uranium at Ben Lomond.

He said there could be no justification for the

mine given the extremely limited job opportunities, the health hazards and the environmental dangers.

Also France had a bad record in the nuclear industry, with aggressive nuclear power and atomic weapons policies.

Mr West said there was an urgent need to implement the Opposition's policies on uranium which included the banning of mining and exports until safe waste disposal methods were found and adequate safeguards met.

"Australia's support for limiting nuclear weapons is no longer credible in the light of the reprocessing agreement with France, the acknowledged world leader in fast breeder technology," he said.

"Following disturbing statistics on radiation levels in milk and water in northern Australia as the result of fall-out from France's nuclear testing in the Pacific, Australia took the matter to the International Court of Justice.

"The court found France contravened international justice principles.

Mr West said Minatome was owned by Pechiney and Total Oil, which in turn was owned 20 per cent by the French Government.

"This is not the sort of company we want in Australia, with a bad environmental history in its own country and backed by a Government with a proven disregard for people's health and safety."

CSO: 5100

RAIL UNION TO WAGE INTENSIVE ANTI-NUCLEAR CAMPAIGN

Union Targets

Canberra THE AUSTRALIAN in English 4 Mar 81 p 30

[Text] The Australian Railways Union plans a concerted industrial guerilla campaign to impede the development of Australia's nuclear industry.

In Melbourne yesterday the national secretary of the 49,000-strong Australian Railways Union, Mr Ralph Taylor, said the union's actions would not be confined only to existing sites, like the Mary Kathleen mine in Queensland, but extend to proposed developments across the country.

Likely targets would include Roxby Downs and Yeelirrie.

"We are looking with the ACTU and other unions at the materials that will be going to these new mining sites with a view to preventing them being transported by rail," he said.

"We are not alone in this and I think the ACTU under the leadership of Cliff Dolan is increasingly stepping up its practical opposition to the nuclear industry."

Mr Taylor said he was particularly upset at disclosures that a confidential report by a federal inter-departmental committee had shown a new legislative base was being prepared for the promotion, regulation and development of an Australian nuclear industry.

Dr J. Camilleri of the Movement Against Uranium Mining said: "We have known for some time of the contents of the inter-departmental document. What it basically does is establish the legal framework for a full-scale nuclear industry in Australia.

"What it attempts to do is introduce to Australia a full-scale nuclear industry by stealth and deception. It is clear the Government is too frightened to go to the people and say, 'We propose to go beyond uranium mining, to have uranium enrichment and nuclear reactors in one or more States.'

"It is an attempt to further protect and promote the interests of private industry in the development of nuclear power. It is an attempt to give more power to the States and leave less federal control over this very dangerous industry.

"It completely ignores the tremendous threat to civil liberties, so what the anti-nuclear movement is going to do is form a national coalition to oppose the Government's plans."

Antinuclear Coalition

Sydney THE SYDNEY MORNING HERALD in English 4 Mar 81 p 9

[Text]

MELBOURNE. — The Movement Against Uranium Mining has joined forces with the Australian Railways Union in an attempt to thwart any plans by the Federal Government to step up the Australian nuclear power industry.

The spur to action came when proposed legislation, seeking to cater for a full nuclear power industry in Australia, was leaked to the Opposition spokesman on urban and regional affairs, Mr Uren.

However, the Minister for National Development and Energy, Senator Carrick, said in the Senate yesterday he knew of no suggestion "at the moment" that a nuclear industry be established.

He said the work of an inter-departmental committee reviewing nuclear energy laws in no way foreshadowed this.

MAUM announced yesterday it will form a coalition of anti-nuclear groups, church groups and political parties to oppose the plans.

The Australian Railways Union also announced it will begin using "guerrilla-type" action to prevent rail carriage of equipment and materials to uranium mines in the Australian Capital Territory, Western Australia and Queensland.

The union will also delay or prevent the rail transport of yellowcake from the mines.

Dr Joe Camilleri, organiser of MAUM, said yesterday he had known about the Government's plans for some weeks.

"The legislation seeks to establish a legal framework for a full-scale nuclear industry in Australia by stealth and deception," he said. "We are going to make sure there is the most almighty opposition."

The campaign against nuclear industry will be sustained, but an immediate aim will be to stop the legislation being introduced before June when the Australian Democrats — who are opposed to uranium mining — will hold the balance of power in the Senate.

Dr Camilleri said a fund had been established to support the ARU campaign and MAUM had made a contribution of \$2,000.

The ARU federal secretary, Mr Ralph Taylor, said his union's actions would be concentrated on the Mary Kathleen mine in the Northern Territory, the Benlomman mine in Townsville, Queensland, South Australia's Roxby Downs mine and the Yellirrie mine in Western Australia.

He said much of the proposed action would be left up to the "imagination" of union members but would include delays in shunting, loading, attaching, marshalling and signals.

CSU: 5100

BRIEFS

SA URANIUM POLICY--The South Australian Government has released details of its secret policy on uranium enrichment, which includes high-level talks with foreign experts on the development of a uranium refinery in the State. The first public release of the Uranium Enrichment Committee's policy guidelines revealed a centrifugal enrichment process--pioneered by the British Urenco-Centec company--was considered appropriate for South Australia. A confidential agreement has already been signed between Urenco-Centec and the South Australian Government providing for continued negotiation on development plans. The guidelines show the South Australian Government believes it should have equity in any enrichment plant. But it recognises the ultimate responsibility of the Federal Government in such matters and plans to keep it informed. [Text] [Canberra THE AUSTRALIAN in English 9 Mar 81 p 19]

PACT WITH CANADA--Canada early today became the seventh country to conclude a nuclear safeguards agreement with Australia. The agreement was signed in Ottawa by Canada's Secretary of State for External Affairs, Dr M. Macguigan, and the Australian High Commissioner in Canada, Mr B. G. Dexter. As Canada and Australia are both uranium exporters, the main practical importance of the agreement is that it safeguards Australian uranium while in Canada for conversion to uranium hexafluoride for ultimate use elsewhere. Because Canada is a major exporter of equipment and technology there is the future possibility of the transfer to Australia of Canadian nuclear equipment. The agreement was welcomed by the Minister for Trade and Resources, Mr Anthony, and the Acting Minister for Foreign Affairs, Mr MacKellar. The signing ceremony in Ottawa followed a brief meeting between the Minister for Foreign Affairs, Mr Street, and Dr Macguigan in Canada. Australia signed earlier safeguards agreements with Finland, the Philippines, South Korea, the US, the UK and France. Mr Anthony and Mr MacKellar said the agreement with Canada fully satisfied the Government's nuclear safeguards requirements. It provided for the prohibition of explosives and military use, and the application of International Atomic Energy Agency and other safeguards. [B: Wio Joustra] [Text] [Canberra THE AUSTRALIAN in English 10 Mar 81 p 17]

URANIUM STOCKPILE--The Federal Government has asked Queensland Mines not to return uranium oxide borrowed from the Government stockpile until after the end of June to avoid an unanticipated payout of 50 million. The payout would wipe out the Government's budgeted domestic surplus of \$30 million. Queensland mines has returned some uranium to the Government stockpile and the Government

has paid it \$13 million. The company is now ready to return the remaining amount it borrowed and has asked the Government to repay a further \$50 million. The money is a deposit which Queensland Mines paid to the Government for uranium drawn from the stockpile. The company drew the uranium for contracts it could not have met because of delays in the start-up of the Nabarlek mine. The Government wants to include the payout in the 1981-82 Budget. But Queensland Mines has told the Government that if it is not prepared to accept the repayment then the company expects the Government to pay interest on the outstanding \$50 million at current market rates. Although the options which the company gave the Government--repay the money or pay interest on it--were considered by Cabinet last week, the company has not yet heard from the Government. [Text] [Melbourne THE AGE in English 10 Mar 81 p 25]

KALGOORLIE URANIUM--Kalgoorlie--Workers at Western Mining Corporation's uranium pilot plant north of Kalgoorlie have been offered a \$2000 bonus to stay till the end of the project. This is expected to be at the end of this year or early in 1982. The Yeelirrie projects manager, Mr Ian Letts, said that the bonus was a scaled figure with a maximum of \$2000 for workers who had been there for more than nine months. There are approximately 80 men at the plant. The WMC operations manager in WA, Mr Keith Parry said that everything was going according to plan at the pilot plant. The aims--to check the metallurgical flow and make decisions between several possible processing options--were being met successfully. The results will be used to perfect the eventual production methods at Yeelirrie, 500km north of Kalgoorlie. Mr Letts said that at this stage they did not expect they would have to roast the ore, as previously thought, to control its behaviour. Mr Parry said that the tailings at the plant were stored in a dam, in accordance with the environmental plan. [Excerpts] [Perth THE WEST AUSTRALIAN in English 10 Mar 81 p 27]

KAMBALDA WASTE--Coolgardie--The possibility of radioactive waste being stored at Kambalda does not worry the Coolgardie shire president, Cr Jack Tree. "We are a mining area and we have lived with mining dangers all our lives," he said. Western Mining Corporation's director of operations has said that the Kambalda operation is a likely place for storing 100 drums of low-grade radioactive waste. The waste was sent accidentally to Singapore two years ago. It contains 30 millicuries of the radioactive isotope cesium 137 found in a measuring gauge accompanying a shipment of scrap metal imported by Singapore's National Iron and Steel Mills. The measuring gauge had been missing from WMC's Kambalda nickel operations. "We are not greatly worried at all by the proposal," Cr Tree said. "They can store as much as they want. All they need to do is drop it down some deep mine shaft." [Text] [Perth THE WEST AUSTRALIAN in English 10 Mar 81 p 27]

NUCLEAR SAFETY--Senator Mason (AD, NSW) asked what national standards existed for the transport of nuclear materials. He said a traffic accident in December had resulted in a container of radioactive material being split open, leading to allegations that two policemen who handled the drum had since suffered "unusual illnesses." The Minister for National Development and Energy, Senator Carrick, said there were different specifications for handling different types of radioactive material, and different rules were applied by the States and the Commonwealth. To a follow-up question from Senator O'Byrne (Lab., Tas.), the

Minister added that accidents with radioactive material happen "quite commonly" in Australia. A safety code for materials handling was being discussed by all Governments. He said he had "no reason to believe that the State laws are not as stringent as we would desire." (From 'Questions in the Senate') [Excerpt] [Melbourne THE AGE in English 11 Mar 81 p 16]

ACTU, PACIFIC BAN--The ACTU yesterday decided to take part in a meeting of Pacific-region unions aimed at making the area a nuclear-free zone. The meeting, to be held soon in Vanuatu, will discuss inhibiting or blocking both the testing of nuclear weapons and the dumping of nuclear waste in the Pacific. The ACTU president, Mr Cliff Dolan, said that a coordinated plan of action by unions could make the dumping of waste difficult. Unions could prevent the manning of loading facilities and have ships' crews withdraw their labour from dumping missions. A campaign to get public opinion against France, or any other country, testing nuclear weapons in the area could also affect the testing programmes. The meeting will involve unions from Australia, New Zealand, Hawaii, Fiji, Japan and the Pacific island-nations. [Text] [Perth THE WEST AUSTRALIAN in English 11 Mar 81 p 8]

PACT WITH SWEDEN--Canberra--Australia yesterday signed a nuclear safeguards agreement with Sweden--the eighth Australia has signed so far. The agreement was signed here by the Foreign Affairs Minister, Mr Street, and the Swedish Ambassador to Australia, Mr Lars Hedstrom. Mr Street said that it fully satisfied the Government's nuclear safeguards requirements. It also covered transfers of nuclear material, nonnuclear material, equipment and technology between the two countries. [Text] [Perth THE WEST AUSTRALIAN in English 20 Mar 81 p 35]

JABILUKA ENVIRONMENTAL THREAT--Darwin--A member of the Senate standing committee on science and the environment has called for careful reconsideration of Pancontinental's Jabiluka uranium development after flooding of the mine site last week. Senator Mason (AD, NSW) was speaking in Darwin after visiting the site on the edge of Arnhem Land this week with members of the committee. The mine, on Magella Creek, could pose serious environmental problems, he said. Flooding at the company's No 1 ore body raised the issue of a high risk of contamination of the creek and the Alligator River system. Short-term mining could put the whole Kakadue national park at risk if it were allowed to go on. Jabiluka contains the biggest uranium deposit in Australia and has reserves of 207,000 tonnes of uranium oxide. [Text] [Perth THE WEST AUSTRALIAN in English 21 Mar 81 p 13]

URANIUM INTERESTS--North Kalbarli Mines Ltd. has purchased a 50 percent interest in Teton Exploration Drilling Company Pty. Ltd. (Teton Australia) for A\$5 million. Teton Australia has a 25.5 percent interest in the Honeymoon uranium project in South Australia as well as joint venture participation in other uranium prospects in Australia. The company will undertake general mineral exploration in Australia to be funded jointly by North Kalbarli and Teton Exploration Drilling Co Inc. a wholly owned subsidiary of UNC Resources Inc. of the United States. [Text] [Brisbane THE COURIER-MAIL in English 4 Mar 81 p 27]

GANDHI TELLS PLANS FOR NEW POWER STATIONS

New Delhi PATRIOT in English 27 Feb 81 p 5

[Text] Prime Minister Indira Gandhi on Thursday said an ambitious programme has been drawn for nuclear power in the country, reports PTI.

In reply to Mr N.P.C. Naidu, she said there is a proposal to start construction of three new atomic power stations with two units of 35 MWE capacity each and three more heavy water plants during the sixth Plan period.

This will add 1410 MWE to the power generating capacity, she said.

In another reply to Prof Ramlal Parikh, she said the proposal to set up an atomic power station in the western region of which Gujarat is a part is under consideration. The work on the project is expected to commence in 1981-82 and the station will be commissioned in 1990-91.

The Prime Minister said the alternative energies commission proposed to be set up will have full executive and financial powers of the Central Government.

Replying to a question of Mr Jaswant Singh, she said the composition and other details of the commission will be notified shortly.

The commission will formulate policies and programmes for development of new and renewable sources of energy, coordinate and intensify research and development activities in this regard and ensure implementation of Government's policies in regard to all matters concerning these sources of energy.

In reply to Prof Ramlal Parikh, Mrs Gandhi said that Rs 50 crores have been provided during the sixth five year Plan for development of new energy sources. Out of this, about Rs 5 crores will be available for the bioenergy programmes including intensification and promotion of research and diverse feed material and in different climatic conditions to bring down the cost of the plant to work out distribution mechanism and to study socio-economic aspects.

Rs 4 Cr Plan

The Prime Minister said that for 1975-80, Rs 4.6 crores as provided the development of new energy sources in the budget of science and technology department. [as published] Under this, about Rs 90 lakh was spent on the promotion of

biogas R and D programmes in the country including use of diverse food material local construction material, microbiology etc.

Replying to Dr Lokesh Chandra, the Prime Minister also said that incentives are proposed to be introduced for manufacturers and users of solar energy equipment.

She said an information programme for greater public awareness is being initiated to popularise wider use of solar energy. There was, however, no specific proposal at present to install solar energy devices or systems in Parliament House on a pilot basis.

CSO: 5100

GANDHI TELLS HOUSE NUCLEAR ENERGY NEEDS, PLANS

New Delhi PATRIOT in English 26 Feb 81 p 5

[Text]

PRIME MINISTER Indira Gandhi informed the Lok Sabha on Wednesday that one overdue consignment of 19.8 tonnes of enriched uranium applied for in August 1979 and scheduled to have been supplied between February and September 1980 has not yet been received from US, reports PTI.

Another application for 19.8 tonnes of enriched uranium had been made in September 1980 for deliveries between March and September this year, the Prime Minister told Mr R P Gajkwad in a written reply.

She said the total quantity of enriched uranium received from US till December last was 233.4 tonnes.

Mrs Gandhi said it was not necessary to set up any pilot plant as indigenously produced heavy water could be used directly in the atomic power plants.

However, a pilot plant was being set up at Baroda to establish the feasibility of setting up heavy water plants based on ammonia-hydrogen exchange process independent of the fertilizer plants. The engineering de-

sign was being completed and procurement action was under way.

Replying to another question, the Prime Minister said after revamping, the heavy water plant at Baroda had gone on stream on 21 July last year. Sustained production had started with effect from 2 January this year, she said.

Mrs Gandhi said the heavy water plants at Nangal, Baroda and Tuticorin with a total design capacity of 152.6 tonnes per annum were under production.

She said the make-up requirement of Rajasthan Atomic Power Station was proposed to be met by heavy water import from USSR, in the revised estimates 1980-81, an amount of Rs 11.76 crores had been provided to cover the import.

INDIA

AEC CHAIRMAN SPEAKS ON NUCLEAR ENERGY PLANS

New Delhi PATRIOT in English 24 Mar 81 p 10

[Text] India's nuclear experts feel that some of the rigid specifications laid down for the setting up of nuclear power plants need a review in the light of the country's experience in the field.

Atomic Energy Commission chairman H N Sethna pointed out on Monday that much experience has been gained since the early days of atomic energy when there was a tendency to impose very rigid specifications for public safety.

Dr Sethna, inaugurating a workshop on fabrication of stainless steel equipment for atomic projects in Kalpakkam, said with growing experience it was possible to review these specifications for changes as some of them lead to higher production costs and longer completion schedules.

While it would sometimes become necessary to tighten up certain specifications for additional security and safety, it would be possible to recommend less rigid specifications in other areas, thereby cutting the costs, he explained.

The atomic energy chief said after the experiences of the past decades, India was now planning to bring the installed nuclear power capacity to 10,000 megawatts by 2,000 AD. The mining of uranium, fuel fabrication and production of heavy water were being geared up to meet the target, he informed.

These include plans for commissioning the MAPP and future fast reactor programmes. Every effort was being made, he said, to provide the necessary heavy water for MAPP-I before the middle of next year. Plans have also been initiated for preparing the feasibility report for setting up a prototype fast breeder power station towards the middle of the nineties.

Speaking of the experience gained in fabrication, Dr Sethna said Indian scientists and technologists had done pioneering work and built up a vast pool of expertise.

CSO: 5100

NANGAL PLANT TO STEP UP HEAVY WATER PRODUCTION

New Delhi PATRIOT in English 5 Mar 81 p 4

[Text]

NANGAL, (Punjab), March 4

THE production of heavy water at the State-owned National Fertilisers Limited would be increased by 50 per cent from the present 14 tonnes to 21.7 tonnes a year when it installs a "polishing plant" here shortly.

This would be done by processing the "condensate" water available within the factory instead of the natural water from nearby the Sutlej as was being done till now. NPL General Manager B. S. Kakkar told a press party which last month visited the factory on the occasion of its completing twenty years.

He said "condensate" water contained 400 parts per million (PPM) of heavy hydrogen as compared to 200 ppm of heavy hydrogen found in the river water.

The NPL factory presently produces 14 tonnes of heavy water a year by operating hydrogen from water in the electrolysis plant by consuming 184 mw of electricity. The plant uses water received from the Sutlej containing 200 PPM of heavy hydrogen.

But with the commissioning of a new unit in the factory, Mr Kakkar said, the power load available to the electrolysis plant was reduced from 184 mw to 98 mw thus bringing down the production of heavy water.

To overcome this difficulty, he said NPL engineers analysed the water in carbon monoxide conversion section and found that the heavy hydrogen content in condensate was 400 PPM.

Therefore, the management decided to install a Rs 30-lakh polishing plant to purify the condensate so as to remove the traces of methanol and silica.

Mr Kakkar said the cost of the polishing plant would be recovered within a year.

The production of heavy water by this process would be increased from 14 tonnes to 21.7 tonnes a year or by 50 per cent at full power load of 184 mw, he said.

And, at a load of 98 mw, the capacity of the plant would increase from 9.4 tonnes a year to 14.6 tonnes a year.

CSO: 5100

SHARP RISE REPORTED IN COSTS OF NUCLEAR ENERGY PROJECTS

New Delhi PATRIOT in English 3 Mar 81 p 5

(Text)

THE project costs of three of the four atomic power projects in country have gone up substantially mainly due to increase in the prices of imported as well as indigenous equipment and modifications providing additional facilities for improving their performance, reports UNI.

The cost of Rajasthan, Narora, and Madras atomic power stations have been revised according to the Central budget for 1981-82. The other project is at Tarapur near Bombay.

The budget also provides Rs 9.53 crore for a new atomic power station. The location is, however, not mentioned.

The provision for nuclear power schemes has been substantially stepped up from Rs 138 crore in the revised estimate for 1980-81 to Rs 184.87 crore in 1981-82.

The increased allocation in the 1981-82 budget is mainly on account of larger provision for Narora atomic power project (Rs 6.97 crore), second unit of Madras atomic power station (Rs 4.74 crore), waste management and other facilities (Rs 1.33 crore) and inclusion of provision for new atomic power station. These increases are partly counterbalanced by reduced provisions for the first and the second units of Rajasthan Atomic Power Project (RAPP) (Rs

1.48 crore).

Both the units of the Madras atomic power station are in a fairly advanced stage of construction. The approved cost of Rs 61.78 crore for the first unit has now been revised to Rs 107.78 crore and that of unit two from Rs 70.63 crore to Rs 103.03 crore. The stations now has Candu type reactors with a total capacity of 470 MW of electricity. A provision of Rs 14.88 crores has been made in the budget for these two units.

The cost of Narora atomic power station in Uttar Pradesh (two units of 220 MW each under construction) has been revised from Rs 200.58 crore to Rs 317.40 crore. The budget provision for the station is Rs 47 crore for procurement of equipment and civil and electrical works. The project cost has been revised due to, among other things, escalation in the cost of imported as well as indigenous equipment and modification and design changes.

The project cost of Rs 33.95 crore (approved in 1964) of the first unit of the Rajasthan

Atomic Power Station has now been increased to Rs 73.37 crore. The cost of the second unit will go up from Rs 58.16 crore to Rs 92.26 crore.

A budget provision of Rs 25.63 crore has been made for the first unit which is already operational. The allocation for the second unit is Rs 3.75 crore under capital budget and Rs 17.04 crore for operational expenses. The unit is expected to be operational during the year.

The reasons for the revision of the project costs of the two units include incorporation of provision for certain additional works and facilities and escalation in the cost of equipment and services.

Tarapur atomic power station near Bombay was the first atomic power project in the country. It has two boiling water reactors fuelled by enriched uranium and has a total output of 400 MW of electricity.

The budget includes Rs 34.69 crore for operation and maintenance and for capital expenditure on works necessary for improving the performance of the Tarapur station. It also includes provision for payment of instalment for the purchase of fuel obtained on deferred term basis in the past.

INDIAN SCIENTISTS PLANNING TO BUILD SYNCHROTRON

Calcutta THE STATESMAN in English 27 Feb 81 p 1

[Text] Indian scientists are working on frontline technology for building a synchrotron, a high-energy accelerator machine, for carrying out higher study in nuclear sciences. Dr Raja Ramanna, Director, Bhabha Atomic Research Centre, said in Calcutta on Thursday that this future generation accelerator would be duplicate of what other countries might be building or having.

Addressing a Press conference at the variable energy cyclotron project of the Bhabha Atomic Research Centre at Salt Lake city, which became functional last month, Dr Ramanna said that building the cyclotron (an atom smasher) in Calcutta by Indian scientists with wholly indigenous know-how and material had put India among a few countries with sophisticated accelerators. The Calcutta cyclotron was one of half a dozen of its type in the world.

The Planning Commission had cleared the synchrotron project and the national accelerator committee was now studying the machine to be built in India. The USA is reportedly building a synchrotron for China.

Dr Ramanna and Dr Amba Sankaran, Project Director of BARC, Calcutta, said that the complex nuclear accelerator at Salt Lake had broad energy range and had high versatility in accelerating various types of particles. The accelerator will be used for conducting research in advanced nuclear physics, nuclear chemistry, solid state physics, radiation physics and chemistry, isotope production for applications in medicine, industry and agriculture and also for radiation damage studies for reactor material. Both Dr Ramanna and Dr Sankaran invited national laboratories, universities and hospitals to utilize the facilities of the project.

Dr Ramanna said that the operation of the Rs 10-crore cyclotron project at Salt Lake had to be put off for almost three years because of the absence of steady power supply from the West Bengal State Electricity Board. For making the project fully operational, another Rs 2 crores had to be spent for buying a 2-MW diesel generator set.

CSO: 5100

VARIABLE ENERGY CYCLOTRON REPORTED OPERATIONAL

Bombay THE TIMES OF INDIA in English 27 Feb 81 p 6

[Article by S. Kumar: "VEC Operating With Diesel-Generated Power"]

[Text] Bombay, February 26. India's most modern nuclear research facility, the "Variable Energy Cyclotron" (VEC), crippled by chronic power shortage in Calcutta, has now become operational with the installation of captive diesel power generators.

The biggest accelerator in the country, the VEC, once considered by its critics as a "still-born marvel baby of the BARC," is now "alive and kicking after artificial feeding and nourishment" with diesel-generated power, says the project director, Dr C. Ambasankaran, also director of the electronics and instrumentation group at the BARC here.

The most powerful tool for nuclear research, the cyclotron, a cycle reactor, is a device for accelerating charged particles to high velocities so that they can be used for bombarding the nuclei of materials to study the products formed and their radiation properties during nuclear reactions.

Testing Delayed

The significant use of the VEC will be in assessing the radiation damage of materials used in fast-breeder reactors, in producing short-lived isotopes for medical use which cannot be produced in a reactor, and as a national facility for front-line research in nuclear physics for universities and scientific institutions.

The cyclotron requires five megawatts of uninterrupted power for its stable operation. Owing to the erratic power supply, the testing of various systems and of the equipment itself could not be conducted ever since the completion of the project in April, 1977. With the setting up of the two-MW captive power plant in 1980 for the first time, the testing of the system and the services was conducted in a reliable and systematic manner.

In January this year, the VEC went into regular operation producing beams of alpha particles of 30 million electron volts. If all the required power of five Megawatts is made available, the cyclotron will function to its full efficiency, producing beams of 130 million electron volts.

Though the West Bengal state electricity board had promised two years ago to provide a special feeder line for regular supply of power to the VEC, nothing had happened so far. If the board fails to oblige the VED, the department of atomic energy may have to set up more diesel generators for additional power.

At present, the captive plant consumes 2,000 litres of diesel every day and the VEC will operate at least for 20 days in a month. The annual expenditure on diesel alone may be around Rs 25 lakhs.

In 1978, when the scientists declared the project operational, there was a criticism that the project was a waste and it was not successful as it had already taken nearly a decade for completion. But, according to Dr Ambasankaran, a team of foreign experts and, later, an IAEA expert, in their confidential reports declared the VEC as perfect and normal. The real hitch was the lack of continuous power.

As a spin-off from the VEC, the country can fabricate large-sized, magnetic grade steel components and it has achieved a contemporary status in the accelerator technology of the world.

The University Grants Commission has constituted a committee with representatives from universities for drawing out a programme for the utilisation of the VEC. The committee will soon have its second meeting in Calcutta. Already, a circular has been sent to all universities and other institutions announcing the facility available at the VEC.

The VEC will also be useful for studies in nuclear physics, radio chemistry, biology and cancer therapy. A computer for the VEC laboratory at a cost of Rs 2 crores has been installed. Various other research facilities, at a cost of Rs 5 crores, are being set up.

Having achieved a technological breakthrough in accelerator technology, plans are being worked out by the DAE for installing a Rs 15-crore "Synchrotron radiation facility," which has already been approved by the planning commission.

CSO: 5100

INDIA

BRIEFS

POWER TO CYCLOTRON--The West Bengal Government hopes to supply an additional 2.5 MW to the cyclotron project of the Bhabha Atomic Research Centre at Salt Lake in June. A spokesman of the State Power Department said in Calcutta on Tuesday that work on the drawing of a 132-KV transmission line was in progress. The new transmission line would ensure stable power supply to the project. During the day, senior Power Department and WBSEB officials went to Salt Lake to review the progress of work on the transmission line. The BARC authorities have made repeated requests to Mr Jyoti Basu to make available to the project additional power, free from interruptions. The overall power distribution system at Salt Lake was also being strengthened for the domestic consumers. [Text] [Calcutta THE STATESMAN in English 26 Mar 81 p 3]

TROMBAY PLUTONIUM PROJECT--A plutonium recycling project is being set up at Trombay to assess the potentialities of plutonium generated during operations of various natural uranium fuelled power reactors, reports UNI. According to the budget proposals for 1981-82 pertaining to Atomic Energy Department presented in the Lok Sabha on Saturday provisions have been made mainly for procurements of equipment for the project. An increase of Rs 23.60 crore in the 1981-82 budget has been made to accommodate, among other things purchase of heavy water costing Rs 4.81 crore and also for heavy water projects Rs 3.12 crore the plutonium plant is an essential facility for the reprocessing of irradiated fuel from cirus and R-5 reactors at Trombay. [Text] [New Delhi PATRIOT in English 1 Mar 81 p 8]

CSO: 5100

BRIEFS

MORE NUCLEAR POWER PLANTS--Tokyo, 10 Apr (KYODO)--Nuclear power plants in Japan will have a capacity for generating a total of 50,920,000 kilowatts of electricity by the end of fiscal 1990, the Natural Resources and Energy Agency said Friday. The agency said it expected Japan's total electric power demand would increase at a rate of about 5 percent a year and would amount in fiscal 1990 to 907,900 million kWh, slightly more than 1.7 times as large as demand in fiscal 1979. To meet this increase in demand, the agency wants to build additional power plants using nuclear fuel and coal instead of oil since the construction of new thermal power plants using oil has been banned by the International Energy Agency (IEA). At present, the total capacity of nuclear power plants in the country, including those under construction and at the preparatory stage, is 30,900,000 kW. The agency plans to construct 20 more reactors in order to increase nuclear power generation by about 20 million kW by the end of fiscal 1990, ending on March 31, 1991. If the plan is carried out successfully, nuclear power plants will account for 21.7 percent of the total electricity supply in this country, compared with 24 percent for thermal power plants using oil. According to the agency's plan, thermal power plants using coal will increase their total capacity to 29,560,000 kW by the end of fiscal 1990. [Text] [OW101041 Tokyo KYODO in English 1026 GMT 10 Apr 81]

CSO: 5100

SOUTH KOREA DEVELOPING PROCESS FOR PRODUCING HEAVY WATER

Seoul THE KOREA TIMES in English 8 Feb 81 p 5

[Text] A research team at the chemical process laboratory at the Korea Institute of Science and Technology has developed an electrocatalytic process for the production of heavy water, which is essential to nuclear fission reactors based on natural uranium and to nuclear fusion research.

The team led by Dr. C. K. Yun, who writes the weekly column "Tweedledee" in the KOREA TIMES, succeeded in obtaining about 0.5 liter of product containing 0.2 percent heavy water in the first series of test operations at the laboratory facility. The concentration is about 13 times greater than that in natural water.

Heavy water is recovered as a byproduct of hydrogen producing by concentrating deuterium in the electrocatalytic process. It is non-polluting and the manufacturing cost is very low. Since the recovery yield is high and the equipment size is small, it is ideal for manufacture on a small scale. This contrasts with the gigantic facilities abroad.

The main purpose of the present runs has been to demonstrate the technical feasibility of manufacturing heavy water in Korea. The interdisciplinary group comprising the areas of process, catalyst and electrochemistry belongs to the department of chemical engineering of KIST.

When the first step of development is complete, the team will add two more stages to the present system, which will allow production of 99.8 percent pure heavy water. The next step is to install a heavy water module in each of the existing hydrogen facilities in Korea to recover a total of 0.2 ton of heavy water and supply it to various research laboratories at low cost.

It also aims long-rangedly at realizing the hydrogen economy rather than heavy water itself. For instance, it is possible to recover heavy water as a byproduct and supply it to fission or fusion reactors when the peak of electricity is stored and utilized by a combination of an electrolyzer-fuel cell or when the conversion of solar energy into hydrogen is practiced on a commercial scale.

As part of such an effort, the electrochemistry team at KIST previously developed a semiconducting electrode for electrochemical conversion of solar energy, fabricated a hydrogen generator based on it, and demonstrated its operation successfully.

Dr. Yun said, "The catalyst and the electrolyzer used in the present heavy water unit are similar to those being developed in Canada and the United States."

CSO: 5100

SOUTH KOREA TO RELY ON NUCLEAR FUEL FOR ELECTRIC POWER

SK190717 Seoul THE KOREA HERALD in English 19 Mar 81 p 3

[Text] Atomic power plants will be the mainstay of the nation's electricity power sources in the 1990's, outperforming the oil-burning thermal power stations.

According to the revised long-term power supply and demand plan, the ratio of electricity generated by oil-firing power plants against the nation's combined electricity generation is set to be lowered to 18 percent by 1991 from the current 24 percent while that of nuclear power plants be increased to 40 percent from the current 6.3 percent.

The oil-burning thermal power plants were originally supposed to meet 27.6 percent of the nation's electricity power demand by 1990 whereas nuclear power stations were to meet 35.9 percent of the total.

Under the modified power supply and demand plan finalized by the Ministry of Energy and Resources, the LNG power plants will meet five to 10 percent of the nation's total power demand by 1991.

The LNG-fired power plant was not contained in the original long-range power development program.

Proportion of coal-fired electricity of the total domestic power supply was slightly raised to 18 percent from 17.6 percent, according to the new program.

Any change was not made in the field of hydroelectric power generation, the ministry officials said.

The changes in the longrange power development program was made in coordination with the next-stage five-year economic development plan (1982-1986) which is in the final stage of formulation.

The necessity for major changes in the long-term power development program has long been felt by the nation as the energy supply situation of the world has changed significantly in recent years.

In line with new power supply programs, the officials said that the atomic power development will be sped up while existing oil-fired power plants will be converted to non-oil burning plants.

To secure steady and stable supply of LNG for the local power plants burning the gas, the officials said that the government is actively seeking overseas LNG development projects under the development-import formula.

SCIENTISTS CONTRIBUTE TO OPERATION OF ATOMIC POWER STATION

Sofia SPISANIE NA BULGARSKATA AKADEMIYA NA NAUKITE in Bulgarian No 6, 1980 pp 30-35

[Article by Senior Science Associate Vasil Khristov and Prof Zhelyu Zhelev: "The Assistance of the Bulgarian Academy of Sciences to the Scientific Servicing of the Kozloduy AETs and Our Developing Nuclear Engineering"]

[Text] The "Basic Directions for the Socioeconomic Development of Bulgaria in the Seventh Five-Year Plan" as approved by the 11th BCP Congress devoted proper attention to the development and correct use of the energy resources and particularly nuclear energy. The physical and physical-engineering sciences were given the responsible task of working for the effective development, introduction and use of nuclear energy sources as well as the seeking out and utilization of new energy sources. In the carrying out of this responsible task, an important share has been entrusted to the Bulgarian Academy of Sciences [BAN]. At present, during the last year of the Seventh Five-Year Plan and on the eve of the 12th BCP Congress, we can point with satisfaction to definite accomplishments in this area of scientific and technical progress in our country.

For 6 years now, the first nuclear power reactor VVER-440 [water-cooled power reactor] has been in continuous and trouble-free operation at the first unit of the Kozloduy AETs [nuclear power plant] which was first put into operation in July 1974. In February 1976, the second VVER-440 reactor was put into operation, and in the near future a third reactor will go on line. A fourth reactor is under construction and this will be in service in 1981. Hence the electric capacity of the first Kozloduy AETs (consisting of two units each with two nuclear reactors of the VVER-440 types) will reach 1,760 megawatts. In June 1980, ground was broken for the building of the Kozloduy AETs II. This will be built on the basis of two new high-powered Soviet nuclear power reactors of the type VVER-1000 MVV (el.). A new site has already been approved on the Danube River for building the third AETs also on a basis of two reactors of the VVER-1000 MVV (el.) type. Thus the power program envisages that in 1990 the nuclear capacity will reach 5,760 MVV (of electricity), and this equals virtually all the electric power capacity of the nation in 1975.

In assessing the aid of the BAN to the scientific servicing of the Kozloduy AETs and nuclear engineering which is developing in our nation, we must note the great role of our first nuclear research reactor the IRT-2000 built with fraternal aid of the USSR in 1961. Highly skilled engineers, physicists and chemists, the pioneers of nuclear engineering in Bulgaria, learned and developed on it. A portion

of them made up the leadership core of our first Kozloduy AETs. On the basis of the reactor as well as from our fruitful collaboration with the Joint Nuclear Research Institute in Dubna, the Nuclear Energy Institute imeni Kurchatov and through our participation in the Temporary International Collective (VMK) for Reactor Physics Research in Budapest, a number of scientific groups from the Institute for Nuclear Research and Nuclear Power (IYalYaE) under the BAN have carried out successful research activities in the area of urgent scientific and practical problems relating to neutron physics, reactor physics and engineering, radiochemical and radiation dosimetry, radiometry and nuclear metering methods directly or indirectly related to the problems of nuclear engineering which is being created in our country. Our own valuable research experience has been acquired on the methods of internal reactor metering and internal reactor control, on nondestructive methods of nuclear fuel analysis, on numerical methods for estimating the reactor systems, for studying the neutron transfer in the reactor moderators and blocking mediums, on the experimental obtaining and assessing of neutron data for the designing and operation of new fast neutron reactor systems. Radiochemical methods have been developed for obtaining, processing and storing radioactive isotopes as well as radioactive wastes. There are also results in the area of dosimetric monitoring and so forth.

A number of important scientific and practical problems bearing on our developing nuclear power have been solved at the Institute for Water Problems, at the Geophysical Institute, at the Geological Institute, at the Laboratory for Geological Engineering of Weak Ground Foundations and Terrains and elsewhere. A larger portion of the obtained results have been introduced or are in the process of being introduced.

In 1975, a protocol for long-term cooperation was signed between the BAN and the Ministry of Power. This involved mutual aid and joint work between the IYalYaE and the Kozloduy AETs. The BAN was to participate in preparing the scientific research feasibility studies for the engineering plans of the Kozloduy AETs during the Seventh Five-Year Plan. The following main objectives were set down for scientific services:

- 1) Providing optimum operating conditions at the AETs and the most efficient use of nuclear fuel;
- 2) The discovery and practical use of reserve capacity in the system by exceeding its rated power;
- 3) Radiation safety and technical reliability in the operation of the AETs.

The approved coordination program outlined the directions and tasks of research work to achieve these objectives. We will briefly examine several of the completed tasks of this coordination program, the results of which have been introduced or have been turned over for introduction to the Kozloduy AETs or to Energoproekt [?Scientific Research and Design Institute for Power Systems]:

- 1) The development and introduction of new efficient methods for measuring the burn-up of nuclear fuel.

A gamma spectrometric device and method have been developed and introduced for determining the burn-up of nuclear fuel in the used fuel assemblies of the Kozloduy

AETs. The equipment and method are designed for specialists at the AETs and have undergone production testing on 13 used fuel assemblies after one- or two-years' operation of the reactor. The accuracy of the burn-up measurement for one assembly was around 5 percent and this was on a level of the achieved accuracy at major nuclear centers; accuracy was limited by the difficult production conditions (high background gamma radiation, high humidity and temperature in the tank for holding the used nuclear fuel).

It must be pointed out that at present there are no industrial methods for determining either the burn-up or plutonium build-up, and because of this the developments in this area are of great practical interest. Precise experimental information on burn-up has given us an opportunity to utilize expensive nuclear fuel to the limit, leaving the fuel assembly for further operation in the reaction zone. This has also given us an opportunity to select an optimum mode for reloading the reaction zone with assemblies containing different enrichments with uranium-235. This provides an opportunity for a significant economic effect as a consequence of the better utilization of expensive nuclear fuel.

In carrying out this contractual task, a neutron detector system and the corresponding electronic equipment have been developed and the possibilities have been elucidated of metering the amount of plutonium under operating conditions at the Kozloduy AETs by using the method of neutron coincidences. The proposed method is an original one and has undergone production testing for the first time under conditions of used uranium fuel.

2. *The development of a program with improved precision and high speed for reloading nuclear fuel in the reaction zones of reactors of the VVER-440 type and the determining of their neutron physics characteristics.*

The BIPR-5K program has been developed and this was introduced by Energoproekt. In comparison with the well-known Soviet program BIPR-5, the BIPR-5K program has a more flexible organization making it possible to easily incorporate changes in the scheme for estimating individual variations. The changes made in the variation for simulating the use of nuclear fuel lead to a significant (around 50 percent) reduction in the estimating time for one operating cycle. A number of improvements have been achieved in the model of the reaction zone making it possible with greater accuracy to consider the influence of the radial reflector, the change in height of the properties of the absorbing parts of the AIPK and so forth. These lead to increased accuracy in estimating the neutron physics characteristics of the reaction zones in operating VVER-440 reactors. The introduction of the program leads to a significant effect as a consequence of the 2-fold reduction in the expenditures of running time in estimating the reloading of the reaction zones as well as due to the achieving of optimum cartograms for reloading the expensive nuclear fuel.

3. *The elaborated "Mathematical Models and Programs for Analysis of Stationary and Unstationary Thermohydraulic Processes and Kinematics of the VVER-440 Reactors" has been turned over for introduction to the Kozloduy AETs and Energoproekt.*

For achieving optimum economic indicators at the AETs, it is desirable that it operate with parameter values close to the limit ones and provide an opportunity to operate in a variable mode. Here the limiting factors are the fuel physics characteristics of the reaction zone and the reactor loop. For this reason the

development of physically well-based models and programs and their use for determining the basic thermohydraulic parameters in the reaction zone and the first loop is of very great significance for the safe operation of a nuclear power unit both under nominal and transitional operational modes.

A program has been developed for analyzing the nonstationary processes in the first loop and the individual assemblies in the reaction zone of a VVER-440 reactor with operational and emergency problems relating to the reactivity, the consumption of the heat carrier and the generator load. The program has been written on the basis of a mathematical model developed at the IYAIYaE using a modern procedure and effective numerical methods. A program has also been developed for estimating the basic thermohydraulic parameters in the reaction zone of the reactor under a stationary mode. It operates in a broad range of change for the mode parameters in the area of single-phase convection, in boiling and underheating and with developed volume boiling. The models included in the program have been tested out by a comparison with experimental data. Estimates have been made (for temperature, enthalpy, pressure loss, the mass and volume steam content, density and so forth) for maximum loaded assemblies with fuel elements of the VVER-440 reactor at the Kozloduy AETs.

The elaborated programs surpass analogous programs in terms of their universality, speed, the possibilities of employing electronic computers found in our nation, good physical soundness and mathematical realization of the established models and correlations, the possibility of estimating both the normal as well as the "burning" assemblies with nominal and deviant heat emission modes. The collective which carried out this task has been awarded the Gold Medal "For High Technical Level" of the BSNTP [State Committee for Scientific and Technical Progress].

2. Methods and analysis of heat physics processes with the operation of a VVER-440 reactor at above-rated capacity.

The basic aim of the development is to study the possibilities for the operation of the reactor system with above-rated capacity from the standpoint of establishing the maximum tolerable neutron-physics and thermohydraulic parameters of the unit. Neutron physics estimates have been made for determining the axial energy release of the fuel assemblies and the radial course of energy production from the fuel cells. For analyzing the microdistribution of energy release in the fuel cells of the individual assemblies, the DERAB-II-E Program has been used and this operates together with the BIPR-5K Program.

For a uniform stationary analysis of the operation of a VVER-440 reactor, the TERKHID Program has been used and this determines the basic thermohydraulic parameters. The program encompasses the modes characteristic for a water-cooled reactor, with attention being focused on the area of underheated boiling which can arise with unfavorable modes in the most loaded channels. Estimates are made of the reserves before a crisis in heat exchange in the normal and "burning" channels and in normal and deviant operating modes.

The research will make it possible to assess to what degree the VVER-440 reactors at the Kozloduy AETs can operate safely in a mode of above-rated capacity. This will lead to the production of significant additional electric power, particularly during the autumn and winter season when the power system is maximally loaded.

5. Methods of assessing the operational reliability of nuclear reactors and systems of the AETs.

With the development of nuclear power as well as with the development of the construction of AETs in densely populated areas, the dependability and safety problems hold a primary place both in the designing and in operation. In analysis of reliability an important place is held by the question of the efficiency of the heat removing processes in the reaction zone with nominal reactor parameters. This is determined by the degree of knowledge of the thermohydraulic processes in the reaction zone and the deviation of the thermodynamic parameters from their nominal values. Here it is essential to bear in mind that the fuel cell casings of zirconium alloys in the VVER reactors operate under very difficult conditions. For this reason the assessment of operational reliability for the individual fuel cells and the thermal engineering reliability of the reaction zone is of theoretical and practical interest. For carrying out this task, the following were developed:

- 1) An analytical algorithm for calculating the reliability of AETs and which sufficiently corresponds to their specific features;
- 2) A probability model for calculating the operational reliability of the fuel cell casings depending upon temperature and other reactor parameters;
- 3) A probability method for estimating the thermal engineering reliability of the reaction zone of the reactor.

On the basis of the developed methods and models, algorithms and programs have been worked out for the following:

- 1) Analysis of the structural reliability of the systems at a AETs with VVER reactors;
- 2) An analysis of the operational reliability of the fuel cell casing;
- 3) An analysis of the thermal engineering reliability of the reaction zone of the VVER reactors.

In 1980, the methods and programs were introduced for assessing the reliability of the reactor systems at the Kozloduy AETs as well as the power supply for the main circulating pumps, the emergency closing of the check valves of the turbines and so forth. There are plans to use the methods and programs also for analyzing the reliability of the systems at a TETs [thermal power plant] and this will guarantee a multiplier effect for the development. The development has received a diploma from the DKNTF for the achieved results in introducing scientific and technical achievements.

6. The method and technology for deactivating weakly radioactive water at the Kozloduy AETs.

Comprehensive studies have been carried out on the possibility of utilizing organic (ionites) and inorganic (a natural type of zeolite) sorbents for deactivating radioactive water obtained from leaks in the first circulation circuit and the special

scrubber of the Kozloduy AETs. This research has been necessitated by the need to develop more effective methods to deactivate around 500,000 m³ of liquid radioactive waste water annually for the purpose of reducing radioactive pulp (solid waste) as well as for reducing the very expensive capacity for the storing of solid waste. A method has been worked out for utilizing the method of foam separation for the purification of surface active substances (SAS) from 500 mg per liter to 5-10 mg per liter with the subsequent further purification of the SAS beneath 0.3 mg per liter using diatomaceous earth channels. The semicommercial experiments carried out at the Kozloduy AETs (with sorbents in a sodium form) showed the possibility of purifying large amounts of medium and weakly radioactive waste waters (over 500 columnar volumes) to maximally acceptable concentrations for radioactivity (beneath 3×10^{-10} curies (per liter)) and the surface active substances (beneath 0.5 mg per liter).

At present systematic research is being carried out on the possibility of using the asphaltting method for creating solid structures of various radioactive waste and more precisely the distillation residue from the burning of fluid radioactive waste at the AETs for the purpose of creating permanent solid products suitable for storage or final decontamination under controllable underground conditions. A laboratory installation of the boiler type has been designed and built for bitumening the liquid radioactive wastes making it possible to obtain bitumin blocks with a volume up to 6 decimeters³.

2. The method of determining cesium-137 in samples of the environment of the Kozloduy AETs.

The problems of radiation monitoring of the environment are becoming evermore urgent in line with the development of nuclear power and the introduction of radioactive isotopes in all areas of the national economy. Of interest are the most long lasting and toxic radionuclides cesium-137, strontium-90, plutonium-239 as well as iodine-131, tritium and others. National and international programs include the development of methods to analyze low radioactivity from the radionuclides in various samples from the environment, the metabolism of these radionuclides is being studied under normal situations, and their behavior is being forecasted in emergency situations. The results of this research is periodically reported to the UN Committee for Studying the Effect of Ionizing Radiation.

An analysis of cesium-137 is obligatory for samples from the health-protective zone of any nuclear installation, particularly an AETs. The determining of this, like the determining of other radionuclides, is a complicated analytical task. A rapid and effective method has been developed for the analysis of cesium-137 and this is based on the selective absorption of cesium-137 by solvents of various acidity and salt content, without preliminary radiochemical separation of macroelement impurities. The classic method of determining cesium-137 is very long, around 15 days, and requires expensive chemicals. The proposed new rapid method requires 2 days for the radiochemical portion of the analysis with the full coverage of the initial processing of the samples for this at the Kozloduy AETs. The method is applicable to virtually all the analyzed samples of the environment. The effect from introducing the new express method has been caused by the significant reduction in the analysis time and the use of much fewer and less expensive chemicals.

8. *The Institute for Water Problems in the 1975-1980 period made a study on the "Influence of the Kozloduy AETs on the Thermal Regime in the Future Reservoir of the Nikopol--Turnu Magurele Hydraulics Engineering Complex."*

The purpose has been to elaborate a forecast mathematical model by which it would be possible to model the distribution of waste warm water from the Kozloduy AETs with probable changes in the regime of the Danube River and the capacity of the AETs. The created mathematical models and the computer program make it possible to define the geometric dimensions of the temperature field as well as the distribution of the temperatures and velocities in the zone where the waste waters are released under various conditions. The model can also be applied to our other plants which release on the surface waste hot water and this makes it possible to use them in the IITs [?acronym unknown, possibly a research institute] of the KOPS [Committee for Environmental Conservation] as a means of control in new design developments.

It is anticipated that during the period of 1981-1985, together with the Ministry of Power and the KOPS, research will be continued in studying the distant zone of distribution and the influence of stratification. Individual specific situations will be settled which can arise in the future, and in addition the possibilities will be analyzed for using these phenomena to improve the efficiency of the plant and limit the possible consequences of thermal pollution.

9. *The Laboratory for Geological Engineering under the BAI has worked out a study for improving the quality and bearing capacity of weak construction soils.*

The results of this research have been introduced in building the Kozloduy AETs. The problem with foundations consists in eliminating the danger of the uneven settling and sagging of the loess stratum at a depth of 3 meters beneath the foundation elevation. A comparison of the technical and economic indicators for the possible methods (a ballast or soil cushion, silication, packing with a heavy roller and so forth) showed that the most economic and sufficiently secure is a combined method of packing with a heavy roller of the lower elevation and the building of a cement and soil cushion up to the foundation elevation. The initially planned cushion of crushed rock was replaced by a cement-soil one with a total area of 20,000 m² and a significantly lower cost of 3.5 leva per m³. On this the main building of the AETs, the combined auxiliary building and other installations were built. The period of operations has confirmed the correctness of this decision, including the earthquake in Vrancha in 1977.

10. *The Geophysics Institute has been working on two subjects: "Microseismic Zoning of Settlements and Industrial Installations" and "Determining the Seismic Risk of Installations and Structures."*

These subjects are particularly important for radiation safety in line with the rapid development of nuclear power in Bulgaria. Important results have been obtained from the conducted research. The problem has been settled of the initial seismic rating of the Kozloduy AETs. A numerical solution has been found for the effect of the Vrancha earthquake of 1977 on the site of the Kozloduy AETs. Probability accelerograms have been drawn up and these reflect the influence of local earthquakes on the region of the Kozloduy AETs. Programs have been developed for

calculating the seismic risk of the site for expanding the Kozloduy AETs, and particularly sites 2 and 3. Theoretical accelerograms and spectra for the response of the structures and buildings of the Kozloduy AETs have been obtained and analyzed. The influence of the local geological and ground conditions of the above-mentioned sites has been assessed for drawing up real seismograms. The seismic conditions have been studied for the construction of new AETs.

Several of the studies from these results have been incorporated in the contractual subjects with Energoproekt. A doctoral dissertation has been defended on the subject "The Seismic Risk for AETs and Crucial Structures."

11. In 1979, under the IYalYaE an interdisciplinary work group was organized and this is conducting research on "The Selection of a Site for Building a Central Storage Facility for Burying Processed Radioactive Wastes in Bulgaria."

It includes specialists from the IYalYaE, the Geological Institute, the Geophysical Institute and a number of ministries and departments. Four work groups have been set up for the following: 1. Geological prospecting, hydrogeological and geophysical research; 2. radiation safety and environmental conservation; 3. the preparation of basic data for the designing of a central storage facility and 4. the elaboration of methods for the safe storage of radioactive waste.

For this purpose, on the basis of world and Bulgarian experience, the IYalYaE has worked out "Directions and Basic Aspects in Solving the Problem of Building a Central Storage Facility for Radioactive Wastes." This has served as the basis of the work done by the collectives. In 1979 and 1980, the first group completed a large amount of preliminary studies for the prepared program and at this stage has determined the most suitable regions in our country in seismic, hydrogeological and tectonic terms. The next stage is the carrying out of detailed geological, geophysical and hydrological research in the most suitable areas. After the final selection of the site, the work of the remaining three study groups will increase significantly. The ultimate aim of the working commission is to carry out the necessary scientific and applied research and on the basis of this to draw up a report with data on the designing and construction of a central storage facility in Bulgaria.

The economic effect from the introduced contractual studies of just the IYalYaE under the BAN for the needs of the Kozloduy AETs during the years of the Seventh Five-Year Plan is expected to exceed 9 million leva. This effect is a dependable indicator primarily of the high scientific and technical level of the above-indicated contractual applied scientific tasks. These tasks are organically linked and derive from the scientific specialization of the IYalYaE in the area of neutron and reactor physics. Our collaboration with the Soviet atomic institutes and our participation in the work of the Budapest VMK has made it possible for us to work out the most modern and precise experimental and computational methods of neutron and reactor physics. These represent a physical basis of modern nuclear power. Our coworkers have made a contribution in the following areas: to studying the physical parameters of the new high-powered VVER-1000 nuclear power reactors; to studying the resonance parameters of fissile nuclei and the obtaining of neutron data for fast reactors; to working out new pulse methods for determining with high accuracy (0.5 percent) the albedo of the fuel neutrons in the reactor moderators;

to developing new reactor programs with increased accuracy and speed and so forth. On these problems in Bulgaria and abroad over 10 candidate dissertations have been defended; a large number of scientific papers have been published in Bulgarian and foreign journals; a number of certificates of invention have been received and original methods and devices proposed. Definite advances have also been made in the training of highly skilled engineers and physicists for the needs of the Kozloduy AETs.

This is the guarantee for a further increase in the level and effectiveness of our work related to the scientific servicing of the Kozloduy AETs and for our developing nuclear power during the years of the Eighth Five-Year Plan.

The long-range research plan of the IYalYaE for the Eighth Five-Year Plan (1981-1985) envisages the following main areas of scientific research and development in the area of nuclear engineering.

On a full-scale LR-0 critical system (an analogue of the new high-powered VVER-1000 power reactors) built under CEMA auspices at the Czechoslovak RZhEZh [acronym unknown], experimental reactor physics research will be continued on the physics and thermal physics of these reactor systems. Theoretical computational research will be concluded on the physics, thermal physics and dynamics of the VVER-1000 reactors.

In the area of internal reactor control, methods and equipment will be developed for analyzing special nuclear materials (uranium and plutonium) as well as for non-radiated and radiated fuel cells. In this manner methods will be developed for nondestructive continuous analysis of the heat carrier in the first loop of the AETs. This will make it possible: to promptly discover an integrally damaged hermeticness of a fuel cell; to continuously determine integral nuclear capacity at which the reactor is operating; to trace and promptly detect any corrosion process starting anywhere in the reaction zone of the reactor; to continuously determine the boron concentration in the heat carrier of the first loop.

Along with Soviet scientists we plan to work out a system of absolute internal reactor measurements and we must develop a system for calibrating the measurements and provide the electronic equipment for accumulating the results of the measurements and analyzing these results with an analyzing system based upon the M-6800 microprocessor and the international CAMAC standard. Probably this equipment will find broader application in the system for monitoring and controlling the reactor systems generally.

Applied scientific research is to be carried out in the area of reactor noise analysis with the following possible applications: noise diagnosis of defects in the operation of the reactor (boiling, vibration of the fuel cells and control loops, the oscillating of the reaction zone); internal reactor measurements (for example, the burn-up of fuel and the rate of the heat carrier).

We will participate in the collection and processing of the neutron data required for the fast reactors. Experiments will be carried out on the IBR-2 reactor at the Dubna Joint Nuclear Research Institute together with the Obninsk Physics and Power Engineering Institute. We will work on creating an atlas of library data on

fast reactors under CEMA auspices and for this problem Bulgaria is the leading country.

Although on a small scale, under CEMA auspices we will be involved in the major Soviet program of developing the future thermonuclear reactors for energy purposes. One of the tasks in which we will be involved is the developing of methods to diagnose the burning thermonuclear plasma and particularly the development of optical and roentgen-spectrometric methods. We will study the transfer of the fast 14-Mev neutrons in materials from the blanket of hybrid reactor systems and in addition using our neutron generator we will study the constants of neutron interaction with these materials.

10272

CSO: 5100

INTER-AMERICAN AFFAIRS

BRIEFS

URUGUAYAN-ARGENTINE EXPERIMENTAL REACTOR--Within the next few days, Uruguayan experts will journey to the Argentine Republic to meet with experts of that neighboring country and discuss the possibility of installing an experimental nuclear reactor in our country. This information was provided to EL DIA by Guillermo de la Plaza, Argentine ambassador to Uruguay, who added that an Argentine mission will later be coming to Uruguay to discuss the same subject. The diplomat went on to say that these specialists will be jointly evaluating the feasibility of the above project. De la Plaza also stated that the dialog recently held with government leaders in our country gave positive results with regard to the prompt implementation of sizable projects to be carried out by our two nations. Concerning the completion of certain projects underway, he stressed the need for the prompt signing of an agreement which will make it possible to build a gas pipeline to supply our country with Argentine natural gas. As stated above, de la Plaza recently met with the ministers of economy and finance, foreign affairs and industry and energy. Various points were analyzed on that occasion, priority being given to the gas pipeline, a project dating from 1977. (Excerpts) [Montevideo EL DIA in Spanish 12 Feb 81 p 9] 8568

C50: 5100

CONTRACT FOR URANIUM PLANT CANCELED

PY092013 Buenos Aires TELAM in Spanish 1045 GMT 9 Apr 81

[Text] Buenos Aires, 9 Apr (TELAM)--Vice Adm Carlos Castro Madero, the chairman of the National Atomic Energy Commission (CNEA), reported here today that the CNEA has cancelled the contract signed with a joint consortium for the construction and exploitation of a uranium concentrate plant in Sierra Pintada, located in Mendoza Province. He noted that the CNEA must now start to draft a new strategy for the exploitation of this uranium deposit.

Castro Madero thus confirmed what the provincial economy minister, Horacio Dohal, had already reported during a press conference he held on Tuesday in Mendoza during which he reported that the CNEA was planning to cancel these contracts.

Castro Madero made this statement last night at the Jorge Newbery Metropolitan Airport upon his arrival from Cordoba where he visited the Embalse plant and inspected the uranium dioxide production which is processed at an industrial complex there.

Among other things the CNEA chairman told journalists the the CNEA budget is not enough. He said: "Since we need a larger budget, we will have to obtain domestic credits."

He said that no one should be surprised that CNEA is requesting these credits, since approximately 70 percent of the budget approved by the executive branch must be obtained either through domestic or foreign credits. In compliance with this authorization, CNEA will seek credits in accordance with the regulations established by the Argentine Central Bank.

Regarding his visit to the Embalse plant, Castro Madero said that he is impressed with what he saw and he reported that the work will probably end ahead of schedule, that is before 1982.

About his visit to the Cordoba industrial complex which is involved in processing uranium dioxide, he noted that since the work is being carried out at a good pace, it is very likely that Argentina will have uranium dioxide by next February.

Castro Madero also confirmed that the CNEA had cancelled the contract signed with a consortium--three Argentine enterprises and a French one--for the exploitation of the Sierra Pintada deposit because although the contract has been in force since October 1980, the consortium has been unable to meet its commitments for several reasons.

He did not discard the possibility that these works may be undertaken by the Mendoza nuclear enterprise. He noted, however, that if this were the case, the budget resources for mining exploitation and construction of the plant must come from national contributions.

He noted: The contract that was cancelled established that CNEA would pay only when production of uranium had started. That is, CNEA paid for the uranium that was produced. Therefore, any new possibilities to exploit this deposit must be carefully studied.

ARGENTINA

BRIEFS

NEW URANIUM SEAMS--Mendoza, 27 Mar--An enormous explosion, in which 10,000 cubic meters of rock have been removed by means of 9 tons of dynamite yesterday, marked the starting point in the exploitation of Gaucho 1 and Gaucho 2 seams of the Sierra Pintada uranium deposit. The experts believe that the production of uranium--which can be found in great quantities in this area, 240 km from Mendoza--will begin in a few more weeks. [Buenos Aires NOTICIAS ARGENTINAS in Spanish 1255 GMT 27 Mar 81 PY]

CSO: 5100

BRIEFS

PRELIMINARY WORK ON POWERPLANT--Havana, 8 Apr (REUTER)--Preliminary work has begun on the building of the first nuclear powerplant in Cuba, official sources reported today in this capital. The Soviet-designed plant will be built near Cienfuegos in the southern part of the country on the Caribbean Sea. The Communist Party of Cuba's newspaper, GRANMA, reported last week that the first of a group of engineers, technicians, foremen and workers will leave soon for the USSR to be trained in the building of the electronuclear station. It is estimated that the future nuclear powerplant will be in full operation by the end of the 1980's. Cuba was authorized last year by the International Atomic Energy Agency to build the plant. [Text] [PA081239 Buenos Aires LATIN in Spanish 0625 GMT 8 Apr 81]

CSO: 5100

BRIEFS

URANIUM PROSPECTS--An oil exploration company is expected to drill the first well in the Takatu region later this year, Minister of Energy and Mines, Hubert Jack has said. He said that all the required structures, within the soil system, have been found and all that was left to do now was to drill. "There are also intentions to explore offshore areas for reserves of oil," he said. Minister Jack said that Government also expects to establish a petroleum corporation to generally supervise the development of oil and gas in this country. He added that the uranium prospects were very good and that sufficient reserves had been identified and quantified. He noted that if this was to be developed a large part of the processing of uranium would be done right here adding that the total cost of the required factory would be some \$200 million (US). [Text] [Georgetown GUYANA CHRONICLE in English 14 Feb 81 p 3]

CSO: 5100

BRIEFS

URANIUM CONTRACT WITH FRANCE--"About the middle of the year, when the cumulative effects of the earthquake have been determined, it will be decided whether or not there will be new prospecting for oil." This statement was made yesterday by Industry and Energy Minister Francisco Turrelles. During a lengthy and exclusive interview granted LA MANANA, Engineer Turrelles also said that a contract will be signed this month to begin prospecting for uranium throughout the country and that, in this connection, a representative of the French firm engaged to carry on the work is now in Montevideo. He likewise indicated that on or about 20 February he will meet in Montevideo with engineer Daniel Brunella, the Argentine Republic's secretary of energy, to continue conversations about the gas pipeline for which bidding is to be completed by 30 June. During the same interview, the minister confirmed the visit to Montevideo of a representative of the Bureau of Geological and Mining Exploration (BRGM) of France with whom final negotiations will be completed for the signing of the contract covering the prospecting of uranium. In this respect, he indicated that the proper documentation will be signed this month so that prospecting for uranium can begin immediately throughout the country. The contract in question specifies that, within 2 years, an initial evaluation will be made of Uruguay's uranium potential as a basis for formulating and developing probable projects relating to the generation of nuclear electric power. [Excerpt] [Montevideo LA MANANA in Spanish 6 Feb 81 p 7] 8568

CSO: 5100

SYRIA

VARIOUS ASPECTS OF NUCLEAR, SOLAR POWER REVIEWED

Damascus AL-BA'TH in Arabic 1 Mar 81 p 4

/Article: "Comrade Qaddurah Discusses Subjects of Inaugurating Power Projects and Means for Using Solar Energy"/

/Text/ Comrade 'Abd-al-Qadir Qaddurah, deputy prime minister for economic affairs, chaired a meeting this morning which included the ministers of electricity, oil and housing and the director general of the Atomic Energy Authority.

In the course of this meeting, issues bearing on the inauguration of energy projects, consumption of all types, and ways of using solar energy to heat water for household use were discussed. It was also decided to hold a meeting to be organized by the Ministry of Housing in the fifth month of this year under the supervision of the Arab League to discuss ways of using solar energy.

In addition, the Higher Energy Committee will continue to hold periodic meetings to discuss the subject of energy and energy consumption.

In commenting on this item of news, AL-BA'TH's local news editor refers to the exceptional importance underlying the turn toward new energy projects based on solar radiation.

Electric power consumption in our country is increasing at a large rate every day, and it is clear that the sources of water that can be used to obtain electricity are very minor. While the electric plant in the Euphrates Dam was providing 95 percent of Syria's electricity consumption when its operation started, it is not providing more than 70 percent today, as a result of increased consumption. Thus the solutions proposed for obtaining electricity are based either on oil or the atom.

As regards the oil solution, the high prices of oil automatically lead to high electricity prices.

The nuclear solution is difficult and risky. If we want to erect a nuclear plant to generate electricity today we must wait at least 10 years for the plant to be completed, at a time when we find that many frightening breakdowns are taking place in nuclear reactors, even in the advanced countries - the most famous of which

was the episode of the shutdown of the cooling units in the massive nuclear reactor at Three Mile Island in America, an episode which frightened all of America.

To this one should add the point that our fuel consumption is also increasing greatly. We are considered the top country in the world in the terms of gasoline consumption relative to the population. The Syrian treasury defrays the sum of 2.5 billion pounds to subsidize heavy fuel oil.

This all prompts us to think of alternate sources to oil, of which perhaps the best is solar energy, which will never run out.

Since 1830, solar energy has been used in the heating field in some countries of the world. Research bearing on the use of solar energy has witnessed great development in recent years, and devices have been produced which make space and, water heating and pump water more cheaply than oil does. Scientists expect that acquiring electricity from plants operating on solar power will become cheaper than plants operating on distillates in the next few years. It is clear that reliance on the sun for space and water heating will reduce our consumption of gas and heavy fuel oil. In this context, the call to establish a national industry for appliances using solar power acquires great importance, especially since the next few years will be witnessing intense receptivity to these appliances, which will make us fall prey to hard currency imports if we do not have a local industry capable of providing market requirements. In that context, AL-BA'TH's local affairs editor praises the pilot experiment the Ministry of Electricity adopted in our country when it established a pilot plant to produce electricity by solar energy.

11887

CSO: 4802

SOVIET VIEWS ON URGENCY OF NUCLEAR NON-PROLIFERATION

Moscow MIROVAYA EKONOMIKA I MEZHDUNARODNYYE OTNOSHENIYA in Russian No 12, Dec 80 (signed to press 10 Dec 80) pp 48-56

[Article by Yu. Tomilin: "Non-Proliferation of Nuclear Weapons--An Imperative of Time"]

[Text/

I

Within the complex of the problems of disarmament a special place is occupied by the question of the non-proliferation of nuclear weapons. This is as it should be. Nuclear weapons are often compared with the Sword of Damocles. An increase in the number of states possessing such weapons would mean a manifold growth in the danger that this sword would fall upon mankind.

Extremely sharp debates developed with regard to this problem at the 35th Session of the UN General Assembly. Particular attention was devoted to it at the 24th Session of the General Conference of the International Atomic Energy Agency, which was held in Vienna. In a certain sense it continued the work of the Second Conference on Reviewing the Operation of the Nuclear Non-Proliferation Treaty, which was held somewhat earlier--from 11 August through 7 September--in Geneva.

The danger of the spread of such weapons became real as far back as the early 1960's. It was precisely at that time that the question first arose of neutralizing it by means of an appropriate international agreement. The result was the Nuclear Non-Proliferation Treaty, which went into effect in 1970. This important success of the policy of detente proved to be possible primarily due to the persistence of socialist diplomacy, the support of many states, and the position of the realistically minded leaders of the capitalist world, despite the stubborn opposition of imperialist circles and the military-industrial complex. This treaty erected an effective barrier on the path of nuclear proliferation.

Nevertheless, a number of states which refused to participate in the treaty have now advanced right up to the dividing-line which separates them from making the transition to the category of nuclear powers. In this connection, UN General Secretary K. Waldheim emphasized the following points in his message to the Second Conference on Reviewing the Operation of the Nuclear Non-Proliferation Treaty: "This conference is very timely from the viewpoint of the definite increase over the past few years in the danger of nuclear proliferation. Consequently, there is an urgency even greater than before to ensure universal participation in this treaty. The

task of the conference consists of examining how this goal may be attained."

There is also the question of the connection between nuclear non-proliferation and other measures on arms limitation and disarmament. It is obvious that the solution to the problem of disarmament will not get off dead center if we operate on the principle of "all or nothing." Movement toward a final goal is composed of the sequential steps which lead to it. The non-proliferation treaty is one such step. It should be followed by steps in the other directions of arms limitation as well, primarily aimed at nuclear weapons. The general state of the political climate in the world is also important for this purpose. The sharply negative turn in the policy of the United States and that of the other NATO countries has held back negotiations in the field of disarmament and has complicated the international situation as a whole. This circumstance made a noticeable imprint on the course of the Second Conference on Reviewing the Operation of the Nuclear Non-Proliferation Treaty.

The energy crisis which engulfed the capitalist world posed with particular sharpness the problem of mastering new sources of energy. Atomic energy is now being developed the most. It is understandable and justifiable that the widest circle of countries is striving with all possible measures to speed up the development of nuclear energy engineering. But how can this be accomplished in such a way as not to allow increased possibilities for creating weapons of mass destruction? Because, of course, the functioning of reactors allows materials to be accumulated which, after appropriate processing can serve as explosives for nuclear weapons. And the possession of information in certain fields of the technology of the peaceful use of nuclear energy may be of aid in determining the conditions for organizing technical processes with regard to creating a nuclear weapon. Where and how should the line be drawn which would, without hampering the development of the peaceful uses of nuclear energy, reliably demarcate the sphere of creation from the sphere of destruction? This question was the subject of very careful examination at the conference.

In accordance with the statutes of the non-proliferation treaty the conferences on reviewing its operation are held at five-year intervals, and they are supposed to provide the participatory states with "assurances that the purposes set forth in the preamble and the statutes of the treaty are being carried out" (Article VIII, Paragraph 3). The first such conference was held in 1975. It noted the fulfillment of the treaty's principal statutes, which provide, on the one hand, for the obligation of the nuclear states not to transfer to anyone whatsoever any nuclear explosive apparatus and not to aid any other countries in creating such apparatus, and on the other hand--counter-obligations of the non-nuclear states. The conference adopted recommendations aimed at increasing the effectiveness of the treaty.

During the course of the Second Conference it was established that over the period between the First and Second Conferences the principal statutes of the treaty had not been violated. Its participants set forth a number of proposals directed at strengthening the regime of non-proliferation. Moreover, it was noted that the treaty has not only played a key role in the cause of preventing the further spread of nuclear weapons over the planet but has also reduced the danger of nuclear conflicts. The fact that the signatories to this treaty already number 112 states, and another five have now signed it, is convincing testimony in and by itself that this document has international recognition. On the eve of the conference the

following countries became signatories to the treaty: Indonesia, Portugal, Turkey, Sri Lanka, Switzerland, Congo, the PDRY (People's Democratic Republic of Yemen), and several other countries.

The ten years of the treaty's operation have provided convincing proof of the correctness and viability of those principles on which it is based. The obligation to refrain from nuclear proliferation has become a recognised norm of present-day international law.

At the same time a whole series of states--and among them some which have at their disposal the scientific, technical, and industrial potential to create nuclear weapons--have still not become signatories of the treaty. There should be no doubts in anyone's mind about what kind of threat to the world would occur by the acquisition of nuclear weapons, particularly by countries which are located in regions of heightened military danger and which, furthermore, are striving to possess such weapons for the sake of achieving their own aggressive goals. It is understandable, therefore, that at the conference extremely strong concern was voiced by many states over the nuclear ambitions of the RSA (Republic of South Africa) and Israel. "Particular alarm has been caused by the news that Israel and South Africa, states whose policies of aggression and ignoring of UN resolutions threaten peace, have acquired the capability of creating nuclear weapons and are continuing to develop it further," declared, for example, the representative of Yugoslavia, I. Golob. The delegate from Nigeria, O. Adeniji, cited facts testifying to the nuclear armament of the RSA. In particular, he referred to the information that in 1977 the RSA had conducted active preparations to explode a nuclear device in the Kalahari Desert and that it had exploded such a device in 1979.¹

Delegates from several countries declared directly that the cooperation of the Western powers with the RSA and Israel in the nuclear sphere have facilitated, in considerable measure, an increase in the nuclear potential of the latter countries. A document by a group of non-aligned states, presented to the conference, said as follows in this connection; "We must draw attention to the influence which has been exerted on the development of the RSA's capability of creating nuclear weapons by the cooperation which is supposedly being carried out for peaceful purposes.... We should also note that the General Assembly has expressed concern over Israel's capability of creating nuclear weapons." Further on in the document the following remark was made: "In any case, when there is growing evidence with regard to the thrust of such cooperation in the direction of creating nuclear weapons, as is the case with regard to the RSA and Israel, the non-nuclear countries as well as the nuclear powers should in the interests of non-proliferation break off all contacts and all cooperation in the nuclear field with these two states."²

The RSA and Israel have received aid from the West not only as a result of the above-mentioned cooperation but also by illegal means. In the early 1960's a nuclear reactor in the state of Pennsylvania lost 250 pounds of enriched uranium, suitable for manufacturing an atomic weapon. As was revealed, this uranium was delivered to Israel, to the Negev Desert, where a secret plant for making atom bombs was located. In 1968 the steamship Shersberg, registered in Liberia, mysteriously "disappeared"; in its hold were 2,000 tons of uranium ore. In Israel an essay was recently published the author of which asserts that the Shersberg together with the uranium ore was sent to Israel.³

to understand, therefore, the wrathful condemnation which the representatives of the African, Arab, and other states directed at the Western powers, who are conducting a policy of complicity with the RSA and Israel. They based their arguments mainly on resolutions of the UN General Assembly, in particular, on Resolution 34/73 E, which contains a direct appeal to the United States, Britain, France, and the FRG with a call for the "immediate cessation of all cooperation with the racist regime of South Africa in the nuclear field,"⁴ and on Resolution 34/89, which calls upon all states "to cease any and all cooperation with Israel which would facilitate its acquisition and development of nuclear weapons, and also to advise corporations, institutions, and individuals over which their jurisdiction extends to refrain from any cooperation which might lead to Israel's acquiring nuclear weapons."⁵

The representatives of the most diverse states unanimously declared themselves at this conference in favor of countries which are not participants in the treaty joining it as soon as possible. They persistently demanded that measures be implemented which would be capable of blocking the acquisition of nuclear weapons by such aggressive states as the RSA and Israel.

II

The question of the need to carry out measures in the field of disarmament became very acute at this conference. The fact of the matter is that the non-proliferation treaty contains a pledge by the signatories "in the spirit of goodwill to conduct negotiations on effective measures with regard to curtailing the nuclear arms race in the very near future as well as nuclear disarmament and also a treaty concerning universal and complete disarmament under strict and effective international controls" (Article VI). Expressing dissatisfaction in connection with the halt in negotiations on disarmament, many participants in the debates asserted that Article VI has not been carried out. Such an appraisal was made, in particular, by the delegation of Sweden,⁶ as well as, albeit in a more balanced form, by the group of non-aligned countries.⁷

The representatives of the socialist states, while fully sharing the appraisal of the present position in the negotiations as unsatisfactory, at the same time indicated that during the period after the holding of the First Conference on Reviewing the Operation of the Nuclear Non-Proliferation Treaty forward movement had taken place along certain lines of limiting the arms race. For example, a number of international agreements have been successfully concluded. In 1978 the number of existing agreements was supplemented by a convention signed upon the initiative of the USSR on the banning of military or any other injurious use of active substances on the natural environment. In 1974 the USSR and the United States signed a Treaty on Limiting Underground Testing of Nuclear Weapons, and in 1976 the Treaty on Underground Nuclear Explosions for Peaceful Purposes. A new step in the cause of implementing the pledges made in Article VI of the Non-Proliferation Treaty was the signing in 1979 of the SALT-2 Treaty. Because it ascribes great importance to measures for avoiding nuclear war, the Soviet Union, in addition to an appropriate agreement with the United States, has reached agreement in principle with France and Britain on measures to avert an accidental occurrence of nuclear war; such measures should decrease the risk of a nuclear-rocket conflict. On the initiative of the Soviet Union trilateral negotiations have been begun and are

continuing between the USSR, the United States, and Great Britain on the question of the complete and universal banning of nuclear weapons testing.

Of course, the results in the field of arms limitation are far from being satisfactory. Furthermore, during the last few years the United States with the support of certain of its allies has begun to openly sabotage the process of detente, striving to return the world to the status of the "cold war."

As early as May 1978 the NATO countries decided to automatically increase by 3 percent its annual military outlays almost to the end of this century. In December 1979 they adopted a decision to produce and deploy new American medium-range nuclear missiles for the obvious purpose of altering the military-strategic balance in the one-sided favor of the NATO bloc. At the same time Washington proclaimed its own multi-billion-dollar program for increasing armaments.

The militaristic course chosen by the United States found its expression in Washington's so-called "new nuclear strategy." International public opinion is completely right in evaluating this concept as a new attempt to make nuclear war "acceptable." It was precisely this circumstance which many conference participants noted in their speeches. The group of non-aligned states declared as follows in their own document: "Such a theory is undoubtedly illusory, but it is linked with the extremely real danger of getting used to the thought of the allowability of a worldwide nuclear war and an increase in its probability."⁸

The arms race, the constant growth of military expenditures has caused alarm throughout the world. Most of the conference participants emphasized the dangerous nature of such a development and the need to put a halt to it.

Justifiably regarding the question of strategic arms limitation as the most important measure within the plan of carrying out the statutes of Article VI of the non-proliferation treaty, the conference participants expressed regret over the fact that the SALT-2 Treaty had not been ratified and that SALT-3 negotiations had not been begun. Such a point of view was registered, in particular, in the document of the non-aligned states mentioned above.

In fact, the curtailment of the further growth of strategic nuclear arsenals and the subsequent quantitative reduction and qualitative limitation on strategic nuclear-weapons systems are of decisive importance for reducing the threat of nuclear war. It is precisely for this reason that the USSR has consistently attempted to conclude effective agreements in this field with the United States. The SALT-2 Treaty, which was signed in 1979, was supposed to become a major step in this direction. Up till now, however, it has not been put into force because Washington has put off its ratification for an indefinite period. As regards the Soviet Union, as declared in the memorandum "For Peace and Disarmament, For a Guarantee of International Security," which was introduced by the Soviet delegation at the 35th Session of the UN General Assembly, it is "prepared to ratify the SALT-2 Treaty and carry out all its statutes, if the United States will do likewise."⁹

A vivid contrast to the negative position of the United States was the Soviet initiative which was set forth during the course of the negotiations held in Moscow between L. I. Brezhnev and the chancellor of the FRG, H. Schmidt. It was proposed to proceed to discussions of the question of medium-range nuclear missiles at the

same time as the organically connected question of advanced bases for American nuclear facilities (it should be borne in mind that possible agreements with respect to the above-mentioned questions could be implemented only after the SALT-2 Treaty is ratified).

From 17 October through 17 November the first round of Soviet-American talks on limiting nuclear armaments in Europe took place in Geneva. Discussion of these questions, which occurred in a business-like atmosphere, led to a better understanding by both sides of each other's positions.

III

Another vital measure with respect to curtailing the nuclear arms race could be the conclusion of a treaty on the complete and universal banning of nuclear-weapons testing. At the same time such a treaty would also facilitate the prevention of the further proliferation of nuclear weapons, inasmuch as it would propose the inclusion of a wide circle of non-nuclear states in addition to nuclear powers. The refusal of the non-nuclear states to conduct nuclear-weapons testing would create additional obstacles for the creation of nuclear weapons. The link between the Nuclear Non-Proliferation Treaty and the cessation of testing found expression in the treaty's preamble, where mentioned is made of the need "to attain forever the cessation of nuclear-weapons test explosions and to continue negotiations with this goal in mind" (Article 10 of the Preamble).

Negotiations between the USSR, the United States, and Great Britain on the question of nuclear testing, which have gone on since 1976, up to now, however, have not led to working out any appropriate agreement because of difficulties artificially created by the United States and Britain. By hampering the negotiations, these states are pulling back, in a number of instances, from proposals which they themselves have made.

The participants in the Second Conference expressed regret in connection with the unsatisfactory state of affairs in the negotiations; they called for them to be completed on time and the results presented to the Committee on Disarmament. At the same time the non-aligned states posed the question of beginning in the Committee on Disarmament multi-lateral negotiations on the question of nuclear tests and establishing a special working group for this purpose. In the document presented by these countries it was explained that multi-lateral negotiations in the Committee on Disarmament and trilateral negotiations are not only not mutually exclusive but, on the contrary, supplement and stimulate each other.

The Soviet Union looks with understanding on the attempt to undertake additional efforts directed at a complete and universal banning of nuclear-weapons testing. In the opinion of the USSR, the long-term and effective solution to the problem of the universal and complete banning of nuclear-weapons tests is possible only if all the nuclear powers without exception take part in an appropriate agreement. In the light of this, the Soviet delegation did not come out against the creation of a working group on banning nuclear-weapons testing if it will include representatives of all the nuclear powers and its task will be to discuss the questions of the complete and universal banning of nuclear-weapons testing.

However, the United States and Britain in essence blocked the adoption by the convention of any sort of recommendations regarding the above-mentioned question. At the same time the US delegation, recognizing the increased pressure on the Western participants in the negotiations on the part of the other states, did make an en-jointed declaration to the effect that the conference provided a "useful stimulus" for completing work on the treaty.

Taking into consideration the fact that working out and concluding a treaty on a complete and universal ban on nuclear-weapons testing would require a definite amount of time in any case, the non-aligned states proposed that the United States, Britain, and the USSR cease testing and introduce a moratorium prior to concluding a treaty. Washington and London rejected this proposal as well.

It would obviously be incorrect and unjust if the moratorium would affect only three out of the five nuclear states. While conducting a course of accelerated nuclear armament, China has continued nuclear-weapons testing. World public opinion was particularly disturbed by the nuclear explosion which it carried out in October of 1980.

Nevertheless, the idea of a moratorium in itself undoubtedly makes a great deal of positive sense, inasmuch as such a step, undertaken by all the nuclear states, would facilitate the ripening of more favorable conditions for completing work on a treaty to ban nuclear-weapons testing. It was precisely for this reason that the Soviet delegation at the 35th Session of the UN General Assembly in a draft resolution entitled "On Certain Urgent Measures to Reduce the Danger of War" proposed that the General Assembly call upon all states not to conduct during the course of one year, beginning at a date to be agreed upon among them, any nuclear explosions whatsoever without making appropriate announcements to this effect in good time.

As already noted, Article VI of the non-proliferation treaty specifies the obligation of the signatories to carry on negotiations with regard to nuclear disarmament. As early as 1946 the Soviet Union came out with an initiative to conclude an international convention on banning forever the production and use of atomic weapons. Continuing a consistent line of excluding nuclear weapons from the arsenals of the states, the USSR put forth analogous ideas subsequently as well. In 1978 in conjunction with other member-states of the Warsaw Pact it formulated a proposal to halt production of all types of nuclear weapons and gradually to cut down its stockpiles even to the point of eliminating them entirely. This proposal, which envisioned the holding of appropriate negotiations, received widespread support throughout the world. In 1978 the special session on disarmament of the UN General Assembly expressed itself in favor of carrying it out, as did later the 33rd and 34th regular sessions. In accordance with this, the Committee on Disarmament proceeded to consider the specific concepts of the socialist countries with regard to beginning negotiations on nuclear disarmament and a procedure for conducting them.

At the Second Conference on Reviewing the Operation of the Nuclear Non-Proliferation Treaty the high evaluation of the initiative on the part of the socialist states was reaffirmed. Most of the participants expressed regret over the delays in the practical implementation of the decisions of the General Assembly on beginning negotiations with respect to nuclear disarmament.

Widespread support at the conference was received for the proposal made by a number of non-aligned states to create within the Committee on Disarmament a special working group to conduct such negotiations. Its adoption, however, was opposed by the United States and other Western powers, who have given top priority to the quantitative and qualitative increase of their own nuclear arsenals.

Subsequently in New York at the 35th Session of the UN General Assembly, upon a proposal by a large group of socialist and non-aligned states, a resolution was adopted in which, along with a reaffirmation of the need for negotiations on nuclear disarmament, it was recommended to the Committee on Disarmament that it examine, in particular, the question of setting up a special working group on curtailing the nuclear arms race and nuclear disarmament.

Also directly related to the problem of strengthening the system of non-proliferation is the recent Soviet initiative regarding the non-deployment of nuclear weapons on the territory of those states which do not have them at present. An appropriate agreement might provide for obligations on the part of the nuclear powers not to deploy nuclear weapons on the territories of those countries which do not have them now, regardless of whether or not they have alliances with this or that nuclear state. The Soviet proposal, directed at limiting the sphere of the geographical proliferation of nuclear weapons and at hindering the possible destabilization of the strategic position, received overwhelming support at the conference.

Many non-nuclear states have posed and are posing the legitimate question of whether their giving up the opportunity to create their own nuclear weapons should be compensated by strengthening their security by means of extending them special guarantees. This problem also arose at the Second Conference on Reviewing the Operation of the Nuclear Non-Proliferation Treaty.

As far back as 1968, when the non-proliferation treaty was opened up for signing, the Soviet Union, the United States, and Britain made joint declarations on this question, which were then reaffirmed in Special Resolution No 255 of the Security Council. At that time it was a matter of aid in accordance with the UN Charter to the non-nuclear states who were signatories to the treaty in case of a nuclear attack on them. This measure signified an extension of so-called "positive guarantees" to the non-nuclear states who were signatories to the treaty. However, even after the non-proliferation treaty was concluded, a number of non-nuclear states, including those who were signatories to the treaty, continued to insist that they also be extended "negative guarantees," in accordance with which the nuclear states would bind themselves not to use nuclear weapons against them.

Ascribing top-priority importance to nuclear non-proliferation, and at the same time with an understanding relative to the legitimate anxiety of the non-nuclear states with regard to their security, the Soviet Union solemnly declared that it would never use nuclear weapons against those states which abandon their production or acquisition and which do not have them on their territories.

Considerable reverberations were caused by the USSR's proposal that an international convention be signed providing for the strengthening of the security

guarantees of the non-nuclear states. Taking into consideration, however, the fact that the conclusion of such a convention would be held back by the Western states and China, the Soviet Union came out with a new initiative at the 35th Session of the UN General Assembly, declaring its readiness to also examine other possible variants for solving this problem along with an analogous approach on the part of the other nuclear powers. The USSR considers it necessary that all the nuclear states, as a first step to concluding an international convention, should make analogous solemn declarations regarding the non-use of nuclear weapons against non-nuclear states which do not have them on their own territories. The Security Council, on its part, should adopt a resolution approving these declarations, if they are deemed to correspond to the goals of reinforcing the security guarantees of the non-nuclear states.

The conference gave high praise to the role of the non-proliferation treaty as a firm foundation for the peaceful use of nuclear energy and for creating an atmosphere of limited confidence among the states, without which international cooperation in the nuclear field would be impossible. The system of nuclear non-proliferation created by this treaty ensures the optimum conditions for cooperation among states in the international arena for the purposes of reliably averting the spread of nuclear weapons and using atomic energy for peaceful construction.

Without casting any doubts on the usefulness of high-principled agreements with regard to general policy in the field of nuclear exports, a number of non-nuclear states at the same time expressed, to one degree or another, their own dissatisfaction with the state of affairs in this sphere. Such a position is dictated, on the one hand, by the self-interest of the non-nuclear states in an accelerated development of their nuclear-power engineering, and on the other hand, by an anxiety with regard to the disadvantageous conditions of nuclear imports imposed upon them by the Western monopolies.

In the opinion of the developing countries, further progress in cooperation, in particular within the framework of Article IV of the non-proliferation treaty, should be ensured by a guaranteed supply to them of nuclear fuel, equipment, technology, and services on an equitable and mutually acceptable basis. Indeed, the questions touched upon here have become vitally important for many of the world's countries which have embarked upon the path of developing a national nuclear power engineering program. This was also reaffirmed in the summary documents of the program held in 1980 for the international evaluation of the nuclear fuel cycle, which was conducted with the participation of more than 60 countries (including the USSR) and several international organizations. The results of this evaluation indicated that for countries with small and medium-sized programs for developing nuclear power engineering the optimum method for ensuring the needs of the fuel cycle in basic production lines and operations is the creation of international or regional centers, which could furnish long-term and reliable supplies of nuclear fuel to countries participating in such centers, as well as services for storing it, processing, and so forth.

As regards the Soviet Union, it has expressed itself on several occasions in support of forming such centers under the control of the IAEA (International Atomic Energy Agency), as well as other measures to internationalize the

processing and storage of nuclear materials, including plutonium. The Soviet Union also expressed its readiness to render aid in the construction of similar centers, utilizing its own accumulated experience and the technical possibilities which it has at its disposal.

The "full staff committee," created by the Management Council of the IAEA in 1980, could become a useful instrument in solving these and other problems. Its chief task is to seek out the most optimum approaches and solutions connected with a guaranteed supply of nuclear fuel, equipment, technology, and services. The organizational session of this committee was held in September 1980. Its work will be continued in March 1981. The Soviet Union has declared its intention to take a most active part in the work of this committee.

One of the important aspects of the non-proliferation treaty's operation is the exercise of monitoring controls over its observance. These monitoring functions, in accordance with Article III of the treaty, have been entrusted to the IAEA, which has worked out a special system of guarantees. The conference noted the successful implementation of the statutes of Article III of the treaty. The special system of guarantees which the IAEA created within the framework of the treaty has proved its reliability and practical feasibility.

At the present time there are more than 325 large-scale nuclear installations under the control of the IAEA--nuclear electric-power plants, plants for manufacturing fuel, enriching uranium, regenerating spent fuel, research reactors, and critical assemblies. The IAEA carries out its monitoring control function in all the non-nuclear states which are signatories to the treaty and which use nuclear energy for peaceful purposes.

At the conference it was reaffirmed that the IAEA is carrying out its control activity with respect for the sovereign rights of the states and is not hampering the economic, scientific, and technical development of these states, nor inter-governmental cooperation in the field of peaceful nuclear activity.

The complete implementation of the IAEA's control functions comprises a reliable means which the international community has at its disposal to prevent the transfer of fissionable materials for the purpose of creating nuclear weapons or other nuclear explosive devices. Since it ascribes great importance to perfecting the IAEA's control system, the Soviet Union has actively participated in scientific and technical work with regard to strengthening the guarantees. The USSR's institutes and enterprises are being used to carry out research connected with perfecting such guarantees and for training IAEA inspectors.

Thus, the conference asserted that the non-proliferation treaty is an effective instrument for the cooperation among states in the international arena in the interests of preventing the spread of nuclear weapons and of using atomic energy for constructive purposes. The summary results of the conference also mention the need to adopt further measures on strengthening the treaty, increasing its effectiveness, and providing it with a further amount of enforceability.

In his welcoming message to the participants in the conference L. I. Brezhnev noted that as a result of the ten years of the treaty's operation, "it can now be

said with complete justification that its conclusion was an important step on the path of restraining nuclear arms in the name of the interests of peace on earth." He further declared: "The Nuclear Non-Proliferation Treaty effectively serves the interests of countries, both large and small, both nuclear and non-nuclear, both industrially developed and developing. I am confident that the international authority and effectiveness of this important treaty will constantly grow in the future as well, while the sphere of its application will be broadened."¹⁰ Thus, the main route leading to the solution of one of the most important and urgent tasks of present-day world politics--the prevention of the further proliferation of nuclear weapons--has been marked out very carefully.

FOOTNOTES

1. It was already after the conference that the Western press was full of reports confirming that the bright flash of light which had been registered over the South Atlantic on 22 September 1979 was scarcely the result of some mysterious natural phenomenon but the result of a nuclear explosion conducted jointly by the RSA, Israel, and Taiwan. The source of this information is none other than the intelligence agency of the United States--the CIA.
2. Document of the Second Conference on Reviewing the Operation of the Nuclear Non-Proliferation Treaty: NPT/CONF. II/C. 1/2, 26 August 1980.
3. See IZVESTIYA, 18 October 1980.
4. Resolution of the 34th Session of the UN General Assembly: 34/93E, 12 December 1979.
5. Resolution of the 34th Session of the UN General Assembly 34/89, 11 December 1979.
6. See Document of the Second Conference on Reviewing the Operation of the Nuclear Non-Proliferation Treaty: NPT/CONF. II/C, I/1, 25 August 1980, p 1.
7. See Ibid, NPT/CONF. II/C. I/2, 26 August 1980, pp 2-3.
8. Ibid, p 3.
9. PRAVDA, 26 September 1980.
10. PRAVDA, 11 August 1980.

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2384

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BELGIAN DEMANDS ON BORDER NUCLEAR CONSTRUCTION PROGRAMS

Paris LE MONDE in French 14 Mar 81 p 31

[Article by Pierre de Vos: "French Nuclear Projects Continue to Worry Belgian Public Opinion"]

[Text Brussels--"Belgium is like a young puppy. It has nuclear distemper." This is the verdict that a former socialist minister lets fall with a shrug, when he sees the agitation being created around the installation of the French nuclear power plant at Chooz, near the Belgian border, and in connection with the Tournai proceedings that started last week.

Five young people, one girl and four boys, are being prosecuted for destroying the cockpit of the "Andrea Smits," a Dutch ship that was moored at Zeebruges on the Belgian coast, in June 1980. They were trying to prevent the ship from dumping nuclear waste out at sea. The five defendants are also charged with possession of weapons (Molotov cocktails), rebellion against the gendarmes and associating with criminals. They have already spent 6 months in prison, in preventive custody. The exceptional length of this imprisonment shows that the Belgian court wants to treat them like common law criminals and, in a way, to make an example of them.

In Tournai the nuclear problem is complicated by the linguistic problem. The action by the five young Brussels French-speakers took place in Flemish country. Normally they would have had to be tried in Bruges, in Flanders. The hearing was held in Dutch, but since they do not understand a single word of that language, the accused obtained a change of venue to a Tournai magistrate's court.

There it was the examination of two Flemish gendarmes that created a problem. In any case, the accused, who consider themselves political prisoners, are stating that they consider the magistrate's court to be the wrong jurisdiction.

Their argument was rejected by the presiding judge, who refuses even to hear the witnesses called by the defense on atomic problems and waste elimination. "There will be no nuclear debate here," he exclaimed. Sentence will be pronounced on 2 April.

Since 1975, 13,200 tons of radioactive waste from Belgian power plants have been dumped at sea. But Belgium is preparing a storage place on land in the northern part of the country, in Campine.

This prosecution is beginning at the precise moment when Wallonia is worried about the French projects at Chooz. Close to the border, near Givet in the Ardennes, France envisions building four new high-powered nuclear reactors (1,300 megawatts each). For several months the Barre government has remained deaf to the Belgian protests. Brussels is demanding that France give it guarantees as to the security of the population and the protection of the environment. Last 27 February an official delegation began negotiations in Paris. There it presented a study on the impact of these reactors, carried out by Belgian experts. They are harsh where France is concerned: "The approach to the assessment of the project's influences shows in every area a lack of essential--and sometimes even elementary--data needed in order to be able to evaluate the risks with a minimum of reliability. The document France has delivered throws practically no light on any of the questions raised."

In a note drafted in February, Belgium demands "to participate on a continuous basis in the alert and control mechanisms, as well as in the control of the discharges of all kinds, whether or not they are radioactive." Belgium is also asking for guarantees as to the quality and the flow of the Meuse "because of its use for drinking, industrial and navigational water."

Three Projects Completed

Having said that, Belgium chose nuclear power. Three reactors, built by privately-owned companies with public capital participation, are already in operation: one at Tihange (900 megawatts) in Wallonia; two others, 350 and 900 megawatts, at Doel in Flanders. They are already supplying one third of the nation's electricity, as in France. Another three reactors are under construction: one at Doel (900 megawatts) and two at Tihange (900 megawatts each). This nuclear supply is to provide 43 percent of Belgian electricity consumption in 1985.

According to the authorities and electricians, the Belgian security legislation is excessively severe. Therefore the protection provisions would be "infallible."

On the other hand, a special gendarmerie body (246 men) is in the process of being formed, for surveillance of the nuclear installations. The government did not want to leave to the power plants the task of guarding themselves, because those uniformed men could have had the status of a private militia.

8946

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NEUTRON REACTOR, PARTICLE ACCELERATOR USES NOTED

Paris L'USINE NOUVELLE in French 5 Mar 81 p 65

[Article by Marc Chabreuil: "Nuclear Physics Research and Industry Getting Along Fine"]

[Text] French researchers now have two new tools: Orphee, a neutron reactor, and Saturne II, a particle accelerator. Side by side, physicists will study the structure of matter while manufacturers will perfect revolutionary equipment or institute quality controls.

Research engineers in the chemical, metallurgical, or machine-building industries, quality control officials but also biologists, and doctors--like your physicist colleagues, you can all benefit from the possibilities offered by Orphee and Saturne II. The National Scientific Research Center and the French Atomic Energy Commission have just obtained for themselves two powerful research tools at Saclay. "This is a good example of cross-fertilization between scientific disciplines and also between science and industry," emphasized Andre Giraud, minister of industry, during their inauguration.

Nevertheless, in outward appearance, at least, somewhat more removed from industry than Orphee, a nuclear reactor of the pool type, with 14 MTU [MWth], intended "supply beams of neutrons for the study of condensed matter energy states?" [sic]. As a matter of fact, it is nothing of the sort. Neutron diffusion and diffraction, better than light, x-rays, or electrons, reveal the organization of the atoms and molecules in solids or liquids.

By bombarding samples, one can also study the structures of matter at high temperatures (in a furnace, for example), under heavy pressure or in a cryostat (at -270°C), as well as discover unsuspected magnetic materials, study the electrical properties of alloys, explain piezo-electricity, determine the configuration of polymer chains (the French Atomic Energy Commission and Rhone-Poulenc are conducting joint experiments on this subject). Irradiation of small samples in the reactor core will make it possible to dose certain elements thus activated with a precision considerably greater than the one deriving from the physical-chemical methods employed in electronics, metallurgy, and chemistry. One of the 20 neutron beams coming out of Orphee will be used for the neutrography of mechanical parts. This is a service which the CEA [French Atomic Energy Commission] proposed at Fontenay-aux-Roses

several years ago. "In 1980, French and foreign companies entrusted us with 21,000 pieces. For a price between F5 and F5,000, we illustrated the division of powder in pyrotechnical systems, the glueing of parts, the homogeneity of silver welds, the presence of air bubbles in jacks, the tightness of joints, and the distribution of fat films. This type of nondestructive control also permits quantitative measurements (boron content of certain alloys) and aging studies," says Andre Laporte, engineer in charge of promotion. "Orphee, more powerful than our old source, will reduce the time for one shot from 4 or 8 minutes down to 10 seconds," he continued.

The Saturne II particle accelerator likewise has a twin function in industry and research. It was of course built primarily for nuclear physics of intermediate energy forms. But the protons which it produces offer other possibilities. They are eight times more penetrating in copper and steel than gamma rays and they permit the x-raying of heavy and thick pieces, detecting and illustrating, in three dimensions, defects of less than 0.2 mm in 11 cm of iron. Thanks to a new apparatus now being perfected by researchers at the CEA, the exposure duration will shrink from several days down to just 30 minutes for a volume of 1 dm³. This has revived interest on the part of neuro-radiologists in this technique. It has also contributed to a "necessarily fruitful intellectual contact between basic research, concerned with rolling back the limits of knowledge and innovation applied to technological evolution and revolutions," concludes Alice Saunier-Seite, minister of universities.

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NUCLEAR WASTE DISPOSAL PROBLEM VIEWED BY AEC OFFICIAL

Paris LE MONDE in French 25 Mar 81 p 36

[Article by Andre Gauvenet, in charge of protection and safety in the Atomic Energy Commission (AEC): "The Saint-Priest-La-Prugne Nuclear Waste Project"]

[Text] An investigation has been made.

The National Agency for the Disposal of Radioactive Waste (ANDRA), established within the framework of the Atomic Energy Commission (AEC) in November 1979, on 31 March 1980 filed an application for a permit to establish a center to store moderate and slight radioactive waste in Saint-Priest-la-Prugne (Loire). Doubts that have been expressed by Rathier, mayor of Saint-Priest-la-Prugne, regarding the coherence of the information put out by ANDRA on that occasion induce me to give my evidence concerning the development of this matter.

An investigative campaign by elected officials and the people concerned began in November 1979. A local inquiry, in accordance with the procedure for the creation of "basic nuclear installations," was conducted, 19 May-13 June 1980. The inquiry covered many aspects: ANDRA personnel kept themselves at the disposal of the people locally for any needed explanations. The AEC organized trips to Marcoule, Chinon, Dampierre, and the storage center in the Manche department for elected officials and the local press. The persons who agreed to participate were able to have direct contact with the technicians involved in the wrapping and storing of waste. Meetings were offered for both locally elected officials and representatives of various activities or occupations.

In addition, various documents were made available to the elected officials and the public. The first and most important is the application file for a permit to create a storage center. It was circulated in April 1980 within the framework of the local inquiry. That file in particular includes a descriptive account and an impact account. The projected installations are described in detail. This makes it possible to ascertain that the temporary storage of waste, which cannot be stored definitively according to regulation, was actually a part of the initial project. One also finds there a description of waste that can be stored definitively and an enumeration of the safety rules that must be applied.

In order to make information more available to those who might be affected by this project, a simplified brochure was published. This is a much less voluminous document that summarizes the inquiry file and presents a synthesis of the most significant information. Naturally, this simplification results in a loss of information and preciseness.

The first edition of this brochure included some such gaps that could lead to some erroneous interpretations. This is how it was possible that a reference that was made to studies concerning sites, carried out by the Bureau of Geological and Mining Exploration (BRGM), could let one think that this study was the basis for the choice of a site, whereas it was a question only of illustrating the fact that the AEC had long wanted to seek a second storage site.

Actually, information concerning the Saint-Priest-la-Prugne site is the result essentially of surface-water hydrology and deep-water hydrology data acquired during 20 years of exploitation of the mine. A synthesis of this information is in the process of being published. The second edition of the simplified brochure has made it possible to correct flaws of this type.

Recently, in February 1981, ANDRA published the document, "Answers to the Main Questions Asked During the Local Inquiry," which makes it possible to ascertain that the principle options of the initial project have always been respected and, in particular, those concerning safety. In this regard, it appears appropriate to remember that storage safety rests essentially on its intrinsic imperviousness, assured by a series of barriers. The waste is first solidified by being wrapped in a waterproof container, which renders it inactive. It is then placed in waterproof excavated containers, whose cracks are filled in and covered with special grout. Finally, the whole is again covered with a waterproof layer of clay treated to preserve imperviousness until the radioactivity decreases sufficiently to become negligible.

The role of the Storage and Sanitation Industrial Company (SISA) is that of an operator at the Manche storage center in behalf of ANDRA, which permanently exercises the necessary controls and has complete responsibility for the storage. This distribution of tasks is of course inscribed within the framework of the decree for the establishment of ANDRA, which specifically provides for this type of organization.

Having furnished these details, I hope that the information concerning this project will be acted upon in the climate of calmness called for by the commissioner-investigator in the conclusion of his report, from which I extract the following passage:

"...Thus, with regard to the results of the investigation, let us not side with the persuasive elements of an opposition to the project, an opposition which in the main seems quite largely inspired by the emotion, indeed passion, that is generally characteristic of all matters having to do with radioactivity."

BRIEFS

ACCORDS WITH EGYPT SIGNED--Two general agreements concerning nuclear cooperation between Egypt and France were approved on 9 March in Cairo. They are a sequel to the protocol which was signed on 13 February during the Paris visit of Egyptian Chief of State Mr Sadat (see LE MONDE of 14 February). The first agreement involves cooperation between the governments of the two countries for peaceful use of nuclear energy; the second deals with cooperation between the AEC and the Egyptian atomic agency. These two agreements will be signed in Paris during the visit of Maher Abaza, Egyptian minister of electricity and power, on 23 March. The political and technical context for cooperation between the two countries having been defined, trade negotiations are underway for French industry to deliver two nuclear reactors with a total capacity of 2000 MW. In addition, an American delegation is also expected in Cairo at the end of the month to negotiate the sale of three power plants to Egypt, and discussions are in progress for the purchase of two other plants from England. The Egyptian nuclear program provides for the construction of eight plants between now and the year 2000, in order to produce 40 percent of the country's energy requirements. (AFP) [Text] [Paris LE MONDE in French 11 Mar 81 p 42] 11,023

NUCLEAR-GENERATED ELECTRICITY PRODUCTION--During the month of January, nuclear plants provided 8.72 billion kilowatt-hours out of a total production of 25.48 billion kWh. This means that civilian atomic power furnished 34.2 percent of the national electricity consumption. For the year as a whole, due to mandatory interruptions, notably for uranium loading of reactors, the nuclear portion of EDF's production will be 31 percent as compared to 23.5 percent in 1980 and 13 percent in 1978. The national enterprise pointed out that "nuclear equipment operation in industrial service has continued to be very satisfactory, with an 87 percent average availability of the total inventory." [Text] [Paris LE MONDE in French 6 Mar 81 p 30] 11,023

FLEURY REACTOR SITE OPPOSITION--From Special Correspondent Bernard Revel--Carcassonne--In 1979 Mr Giscard d'Estaing promised the construction of the second nuclear power plant of the Greater Southwest region, to be built in Fleury (see LE MONDE of 7 January), a district on the Languedoc coast at the mouth of the Aube river. This site is now in question. The prefect of the Languedoc-Roussillon region announced to the regional assembly of public works on Tuesday 3 March, that he was going to propose this site to the government. In the process he caused a veritable uprising in the Aube department. Socialist deputy Pierre Guidoni stated: "I heard this news with surprise and indignation. It is scandalous for the representative

the government to commit the future of our area without consulting local elected officials or regional advisors, less than two months before the presidential election." Christian Montagne (Socialist Party), mayor of the Fleury district where the latest tourist facilities of the Languedoc-Roussillon coast are expected to be developed, insisted that "we will never accept the power plant. Our needs are not for tourism. The growth of the district would be irrevocably stopped by such an installation. In addition, it would be bad publicity for the Aude coastal area." (Text) [Paris LE MONDE in French 6 Mar 81 p 30] 11,023

NUCLEAR PLANT SITUATION (AUBRE) - One of the two graphite-gas reactors of the power plant at Crepion (Aube) (also known as (Aube) (Aube)) has just been shut down for three weeks. The reason for the shutdown: the fifth-alternator unit which generates electricity had to be taken off. The immediate and automatic consequence of this incident was the shutdown of the reactor, whose power could no longer be released to the network. During the course of ensuing operations, one of the blowers which circulates the gas (which are needed to cool the plant) had a breakdown. Since for safety reasons the unit can only be restarted if all blowers are in working condition, the second reactor will be needed to perform all repairs. The second reactor of this plant, which was shut down a year ago as a result of a significant mishap, should be back in operation at the end of the month. (Text) [Paris LE MONDE in French 6 Mar 81 p 10] 11,023

NUCLEAR PLANT SITUATION (AUBRE) - A hydrogen fluoride leak occurred on Wednesday 4 March at the Crepion nuclear power plant in Pierrelatte (Drome). This incident, without consequences in the environment, and caused by a faulty valve in one of the buildings, did not disturb the plant's production in any way. (Text) [Paris LE MONDE in French 6 Mar 81 p 30] 11,023

OPPOSITION OVER FLOODING - From Special Correspondent M.C.R. -- Brest -- Since the departure of the departmental union came out in favor of the Plogoff nuclear plant, the CGT-EDF has been active in the department in the last few days: the CGT-EDF has been active in the department, stating that it was not consulted and does not endorse the decision of the departmental union. In addition, several unions (notably the Henriet ceramics union) have renewed their opposition to the installation of the plant at Cap Breton. However, agricultural unions last weekend took over a 33 hectare plot of land bought by EDF to house its employees in Pont-Croix. The union of young agriculturalists of the Pont-Croix canton has indicated that "land bought by EDF is sold at above the normal prices being paid here, and this is agricultural land. This spending directly affects our profession." (Text) [Paris LE MONDE in French 6 Mar 81 p 30] 11,023

ENVIRONMENT MINISTER ALL BUT RULES OUT URANIUM MINING

Stockholm DAGENS NYHETER in Swedish 3 Mar 81 p 9

[Article by Ann-Charlotte Samec and Anita Sjoblom: "Debate Around Environmental Protection Drafting Committee: Domestic Uranium Mining Economic Misjudgment"]

[Text] The LKAB [Luossavaara-Kiirunavaara Mining Company] has sought permission to mine 450 tons of uranium annually at Pleutajokk in the Arjeplog municipal district. This corresponds to one-third of Sweden's need for uranium with 12 reactors. In order to extract this uranium it is necessary to mine between 600,000 and 700,000 tons of crude ore. A total of 6,000 tons of high-grade uranium ore is estimated to exist at Pleutajokk.

Mining of the uranium would provide about 200 new jobs at Arjeplog, which has 14,000 inhabitants and high unemployment.

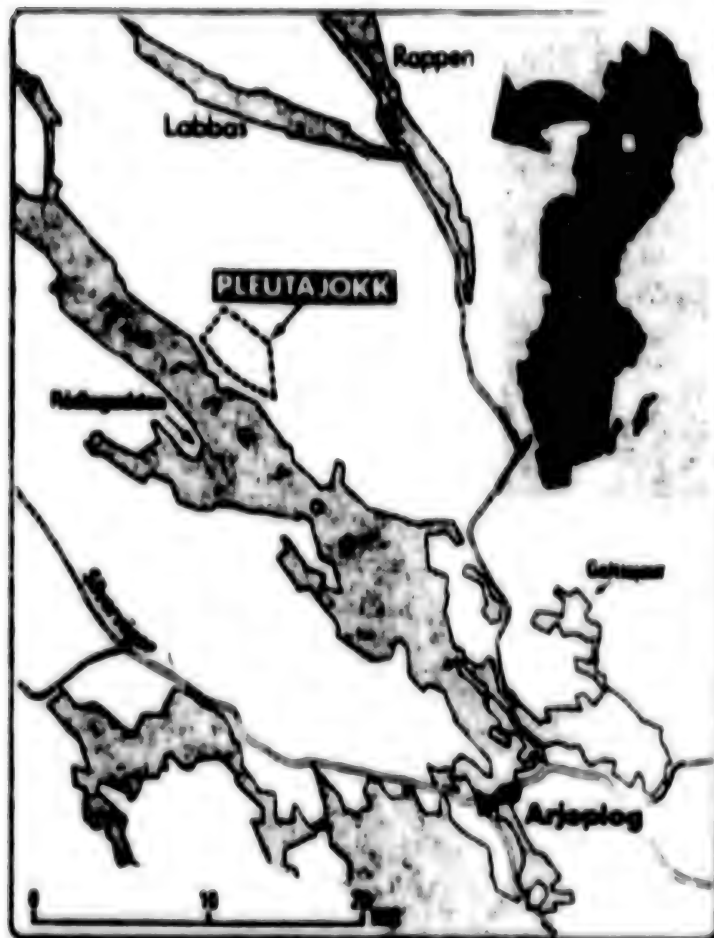
There is no shortage of uranium in the world today. A few years ago an alarm was sounded that the uranium would be used up within a decade or so. But the expansion of nuclear power has only amounted to one-fifth of what was projected a few years ago.

The availability of uranium has forced prices downward to about 260 crowns per kilogram of uranium oxide as compared with more than 700 crowns in the mid-seventies.

If Sweden is to mine uranium it must be economically profitable and, in addition, the environmental risks must not be too great. This was said by Agriculture Minister Anders Dahlgren (Center Party) when the Environmental Protection Drafting Committee on Monday held a question-and-answer session on uranium. Many speakers were of the opinion that domestic uranium mining would be a fundamental economic misjudgment, while others pointed out the risks involved in the slag heaps after mining.

The reason for the one-day question-and-answer session is that the LKAB has sought permission to mine uranium at Pleutajokk in Arjeplog. The government wanted to hear every point of view on uranium mining before it takes a position.

Ingemar Lindholm from Swedish Nuclear Fuel Supply Inc. argued in favor of Sweden's mining uranium.



The LKAB has asked permission to mine uranium in Pleutajokk. Preceding the government's decision a question-and-answer session about uranium mining was arranged on Monday. The radium content will probably increase considerably in Lake Hornavan, where the inhabitants of Arjeplog get their drinking water, maintains Ove Holmstrand at Chalmers, who severely criticizes the LKAB's application.

"Today there are no problems in buying uranium, and furthermore prices are reasonable," he said. "But uranium resources exist in a small number of countries and problems could therefore easily arise for our import. Domestic mining will provide greater security for the energy supply, provide employment in Norrland and will reduce the need for imports by 200 million [crowns] annually."

He also said that today's very low price can easily go up.

It was opposed by Department Secretary Ake Sundstrand of the Department of Industry.

"Everything indicates that the LKAB is making the same fundamental misjudgment regarding Pleutajokk as regarding mining at Ranstad in 1977," he said. If Pleutajokk is to become profitable, the price of uranium must double."

He said that the electric power market of the 1980's will be dominated by competition between coal and uranium, that is to say between coal-fired power plants and nuclear power plants.

Breathe Radon

"Misjudgment regarding the price of coal leads to infinitely great prognosis mistakes for the development of the price of uranium," Ake Sundstrom said.

The environmental risks was the other big question brought up. Dr Frank Barnaby, head of the Stockholm International Peace Research Institute, said that the greatest radiation risk is the radon which the workers breathe in a uranium mine. The greatest risk for the general public is the large amounts of ore left over after mining.

"For someone living in the vicinity of such a slag pile, the risk is estimated to be 70 percent greater than usual of getting lung cancer," he said.

Section head Jan Olof Snihs of the State Radiation Protection Institute also said that the risks with the enormous surplus amounts had previously been underestimated.

Lung Cancer

"But if the piles resulting from uranium mining are sufficiently covered with moraine and topsoil, no environmental effects are expected to arise," he said.

He also said that the risks of conventional accidents such as collapse, landslide and explosion are still greater than the radiation risks for a mineworker.

How great is the risk that the mineworkers will get cancer?

"One worker will probably get lung cancer over a period of about 15 years. In the worst case 10 people could become ill with various forms of cancer over the same period of time, among them lung cancer and leukemia," said Olav Axelsson, professor of medicine at the Linköping Advanced School.

More Than 6,000 Tons

Civil engineer Olav Holmstrand at the geology department of Chalmers Institute of Technology rejected LKAB's application with criticism in a number of important areas.

The LKAB has not mentioned what might happen in accidents or disturbances in the operation of the uranium mine or what countermeasures they intend to take.

The tailings which remain when the uranium has been removed from the ore are abroad considered to be the most difficult problem for uranium mining. But the LKAB

intends to deposit the tailings in a manner which is not tolerated even for ordinary municipal waste dumps.

The explanation of the ore resources gives a strong impression of being built on guesses. In several places there are hints that the operation could involve considerably more than 6,000 tons of uranium. What is economically possible to mine, however, is only indicated in one single sentence. The existing cross sections through the ore indicate instead ore which is very scattered and technically difficult to analyze.

Nowhere has the LKAB indicated that the matrix could cause environmental problems. Matrix is everything which has to be excavated from the mine before the actual uranium ore is reached. But even the rock is probably more or less uranium-containing.

The function of the mine after mining is completed has not been included in the application. The closed mine could cause water pollution, the extent of which must be determined and taken into account. The evaluation of the water discharge in the application is very insufficient.

The LKAB has only viewed the environmental problems from a shortsighted perspective. In the long run the emitted pollution will cause irreparable harm to the environment.

Lake Hornavan, where people in Arjeplog get their drinking water, will probably get a considerable addition of radium.

The tailings will remain dangerous for thousands of years. There is risk of accidental interference in the dumps since they will be camouflaged and will not appear dangerous. After all, one cannot put up signs which will remain legible for thousands of years.

Scathing Criticism

Olov Holmstrand believes that the application as a whole is incomplete, contradictory and in certain respects provides a false picture of what happens to the environment during uranium mining.

The LKAB rejected Holmstrand's scathing criticism on all essential points.

"What Olov Holmstrand asks himself we have asked ourselves and have answered in a satisfactory manner," says chief engineer Tord Ronnqvist at LKAB.

"The question is not whether or not we should have uranium in Sweden, for we decided that when we approved nuclear power. The question is whether we will mine it in Sweden, where we can establish environmental requirements and enforce that they are being followed, or whether we are to leave uranium mining to the foreign producers," said the vice managing director of LKAB.

"Furthermore, production in Sweden provides jobs. In the future it will perhaps be possible to broaden the activity."

"I also want to point out two things: The LKAB has not yet made an investment decision, and the preconditions for such a decision are that mining in Pleutajokk will take place in an environmentally satisfactory manner."

PAPER BACKS NEGATIVE STANCE ON URANIUM MINING

Stockholm DAGENS NYHETER in Swedish 3 Mar 81 p 2

[Editorial by Olle Alsen: "Halt to Uranium"]

[Text] A quite sufficient moral reason exists against the mining of uranium in Sweden. We should not mine the material from which nuclear weapons are forged and by means of which the nuclear weapons technology is spread; we are not ourselves to lay open our theoretically large (but in practice very scattered and therefore unprofitable) uranium resources to blackmail -- "Without uranium no oil" -- or to a future export drive.

In one of the last rejoinders at the all-day meeting of the Environmental Protection Drafting Committee in the House of Parliament around LKAB's [Luossavaara-Kiirunavaara Mining Company] plans for mining in Pleutajokk, local politician Aino Blomqvist (Center Party) from Krokom -- which may be next in line after the LKAB will have to give up on Pleutajokk, as previously Ranstad was given up -- expressed a word of reflection: "No one regrets today that the Social Democratic women put a halt to a Swedish nuclear bomb. The same reaction will occur some time when all plans for Swedish uranium mining have been shelved."

There are other good reasons against uranium mining. The retiring head of SIPRI [expansion unknown], Frank Barnaby, pointed out, for example, that the tailings which leach radium and radon to the air and subsoil water pose perhaps the most difficult problem in the nuclear fuel cycle (which has already led to a mining halt in several U.S. states). These enormous mountains of tailings can surely not remain covered for tens of thousands of years and also cannot be buried deep in the primary rock, as is envisioned with the highly radioactive Swedish waste. The working environment in uranium mines is also hazardous, and the reassuring calculations in LKAB's thin application are too uncertain.

Even so, it will probably -- if the environmental reasons are not taken seriously enough -- be economic reasons which break the Pleutajokk project, just as was the case with Ranstad. Ake Sundstrom of the Department of Industry pointed out (just as the prophesied to the **Commission on Mineral Policy** and for which he was dressed down) that the uranium prices have to double in order for Swedish mining to be profitable, and that both prices and the overflowing uranium deposits and stagnating demand in the industrial nations argue against throwing good money after the bad money at Ranstad.

Since the victorious alternative 2 of the popular referendum explained that Swedish uranium mining is not needed for the 12-reactor program (which Ingvar Carlsson, among others, today tries to forget), and since Agriculture Minister Anders Dahlgren yesterday said that we should not mine Swedish uranium unless it is needed, becomes environmentally safe and becomes cheaper than on the world market, the matter ought to be settled. But, of course, regarding nuclear power and its proponents you can never be sure.

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